SCIENCE FICTION

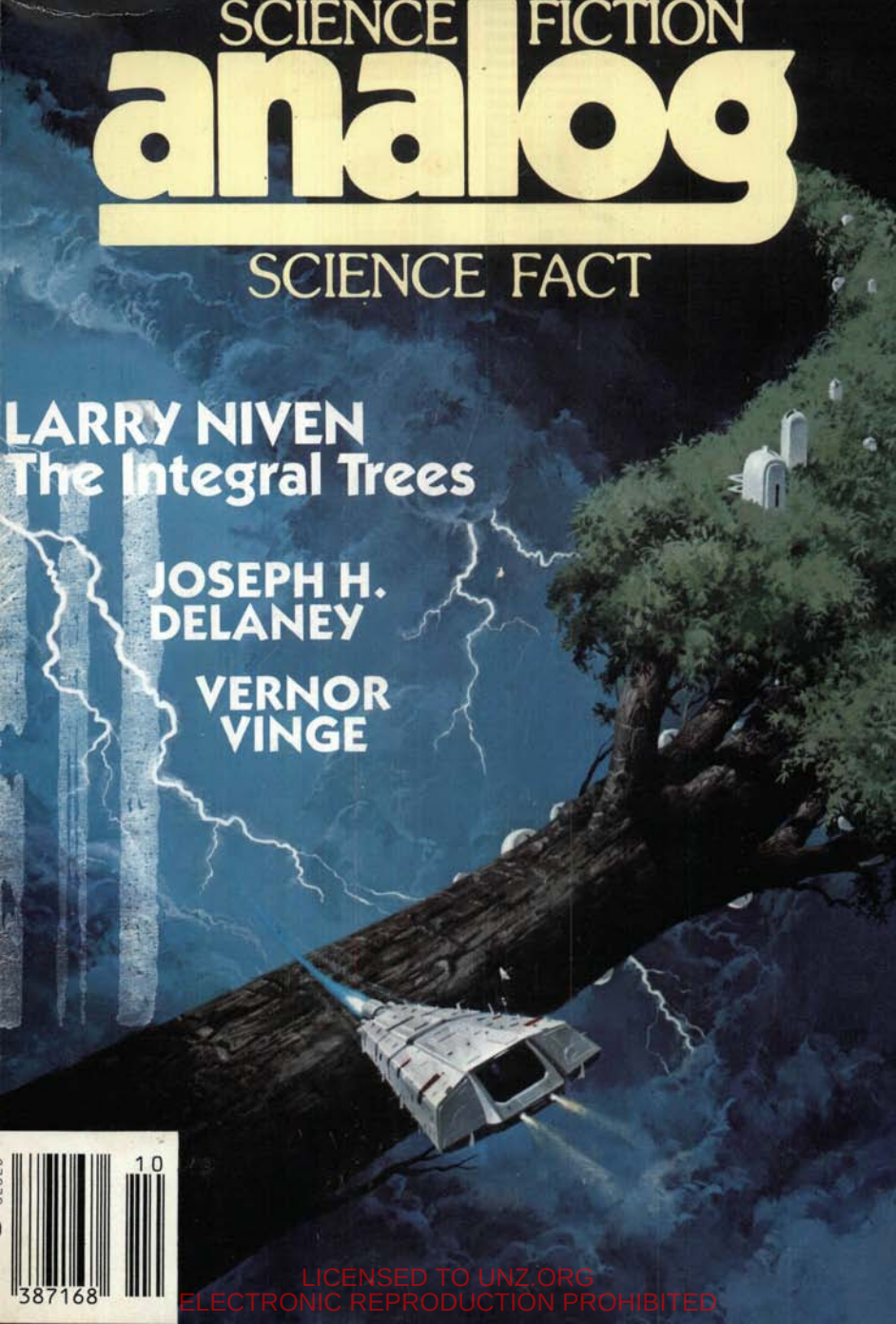
analog

SCIENCE FACT

LARRY NIVEN
The Integral Trees

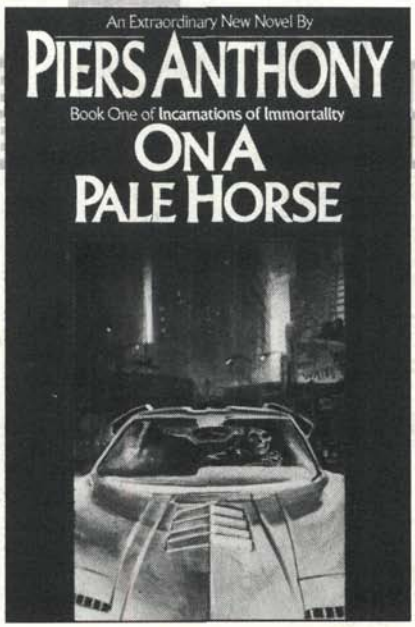
JOSEPH H. DELANEY

VERNOR VINGE



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Enter a world even wilder than Xanth!



ON A PALE HORSE

PIERS ANTHONY

Book One of
Incarnations of Immortality

From the beloved, bestselling creator of Xanth comes a series with even more amazing magic, *Incarnations of Immortality!*

A Del Rey Hardcover

On Sale in October

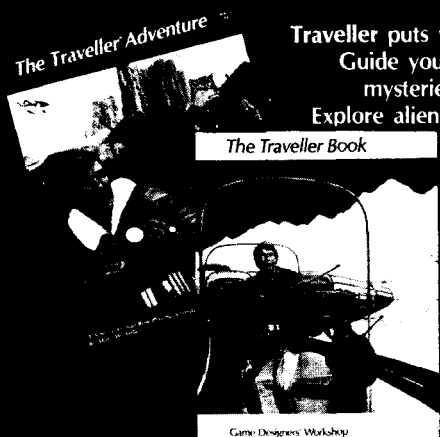
DEL REY **#1 Publisher of Science Fiction and Fantasy**
Published by Ballantine Books

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Put yourself in the story!

TRAVELLER

Science-Fiction Adventure ®
in the Far Future



Traveller puts you in the middle of the action! Guide your favorite character through the mysteries and dangers of the far future. Explore alien worlds, puzzle out the enigmas of ancient civilizations, conduct complicated confidence scams, smuggle, build empires, lead revolutions, wage interstellar war . . . the list of science fiction role-playing adventures is as unlimited as your own imagination.

The Traveller Book

Complete rules, background, advice for players and referees, scenarios, and two short adventures.

The Traveller Adventure

A series of interwoven scenarios and adventures among the worlds of the Spinward Marches.

There are more than forty books, boxed sets, modules, supplements, adventures, and games for **Traveller**, with new material appearing regularly. **Traveller** is available from better book, game, and hobby retailers around the world.

Game Designers' Workshop

P.O. Box 1646, Bloomington, Illinois 61701
Free catalog on request.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

FIRST PUBLICATION ANYWHERE

POUL ANDERSON

TIME PATROLMAN

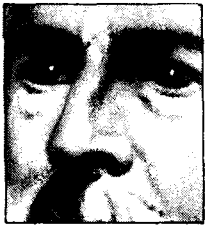
PLUS A GREAT NEW TIME-PATROL NOVELLA!

OCTOBER 1983

FOR BOOKS

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

analog



Vol. CIII, No. 11
October 1983

Next Issue On Sale
October 11, 1983

$19.50 per year in U.S.A.
$1.75 per copy

Serial

THE INTEGRAL TREES, Larry Niven, Part One of Four ____ 14

Novelettes

GEMSTONE, Vernor Vinge ____ 90
ON THE OUTSIDE, LOOKING IN, Joseph H. Delaney ____ 138

Science Fact

INDUSTRY IN SPACE, Walter B. Hendrickson, Jr. ____ 58

Short Stories

QUARKS AT APPOMATTOX, Charles L. Harness ____ 64
LIKE A FINE WINE, Ray Brown ____ 76
FROM TIME TO TIME, Bruce Stanley Burdick ____ 114
SAMIZDAT, Elizabeth Mitchell ____ 128

Reader's Departments

THE EDITOR'S PAGE ____ 6
BIOLOG ____ 57
ON GAMING, Dana Lombardy ____ 75
THE ALTERNATE VIEW, Jerry Pournelle ____ 123
IN TIMES TO COME ____ 137
THE REFERENCE LIBRARY, Tom Easton ____ 163
BRASS TACKS ____ 170
THE ANALOG CALENDAR OF UPCOMING EVENTS ____ 178

Cover by Vincent Di Fate

Joel Davis, President & Publisher

Stanley Schmidt, Editor
Elizabeth Mitchell, Managing Editor
Ralph Rubino, Art Director
Terri Czeczko, Art Editor

Analog Science Fiction/Science Fact is published 13 times annually by Davis Publications, Inc. at $1.75 a copy. Annual subscription $19.50 in the U.S.A. and possessions, in all other countries $22.75 payable in advance in U.S. funds. First copy of new subscription will be mailed within eight weeks of receipt of order. When reporting change of address allow 6 to 8 weeks and give new address as well as the old address as it appears on the last label. Second-class postage paid at New York, NY, and at additional mailing office. Canadian 3rd class postage paid at Windsor, Ontario. 2nd class pending. © 1983 by Davis Publications, Inc., all rights reserved. Protection secured under the Universal Copyright Convention. Reproduction or use of editorial or pictorial content in any manner without express permission is prohibited. All stories in this magazine are fiction. No actual persons are designated by name or character. Any similarity is coincidental. Printed in U.S.A. All submissions must be accompanied by stamped self-addressed envelope; the Publisher assumes no responsibility for unsolicited manuscripts or artwork.

Postmaster: SEND FORM 3579 to ANALOG SCIENCE FICTION/SCIENCE FACT, P.O. BOX 1936, MARION, OH 43306
IN CANADA RETURN TO 628 MONMOUTH ROAD, WINDSOR, ONTARIO N8Y 3L1
Editorial and Advertising: Analog Science Fiction/Science Fact, 380 Lexington Avenue, New York, NY 10017
Subscriptions: Analog Science Fiction/Science Fact, P.O. Box 1936, Marion, OH 43305 ISSN 0161-2328

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Editorial

THE TECHNOLOGY TRAP

Stanley Schmidt

"The environment exacts a price for the survival of the fittest; it captures them."

—Jacob Bronowski

A few days ago I caught the tail end of a radio news item concerning an educational group which is proposing, quite seriously, that schools quit "wasting time" teaching long division and teach only the use of electronic calculators for that operation.

The proposal should strike a familiar chord with readers who remember Isaac Asimov's short story "The Feeling of Power," in which a mild-mannered clerk causes great consternation among the rulers of a thoroughly computerized future society by rediscovering manual arithmetic. Asimov set his story so far in the future that many other "primitive" techniques had also been lost ("I'll believe in soil-growing when I see someone grow grain in soil," says one character), but reality seems to be making him prophetic a lot earlier than he imagined.

The use of calculators in school has

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

been controversial since the beginning (a mere decade back). Many teachers welcomed the chance to decrease the emphasis on calculational details and concentrate more on physical content, but many (including some of the same ones) also wondered whether students might become too dependent on calculators and further erode already shaky arithmetical skills. Some said it didn't matter. If the calculators made it possible for more students to get more right answers, who cared if they did it by a nontraditional method?

The proposal I heard on the radio was the first time I've heard someone in a position to do anything about it openly advocate dropping all pretense of teaching a manual technique for a fundamental, commonly used, arithmetical operation. I submit that carrying things to that extreme does matter.

Before I go further, I should probably emphasize that when calculators started flooding classrooms, I was a physics teacher who welcomed them with enthusiasm (though not entirely without reservations), and my attitude has not changed. I found calculators invaluable, for example, in an acoustics course designed for music majors. Most of these students had not been near a math course in years and found any sort of calculation highly intimidating. Yet some calculation is necessary to a study of this subject, and it's not all of the most elementary kind. Decibels, the measure of sound intensity most likely to be encountered by a musician in the line of duty, are defined in terms of logarithms. Students who were going to understand what decibels meant had to have at least a rudimentary understanding of logarithms, and to solve any problems involving decibels they had to do logarithmic calculations. Before calculators, the problems I could assign were limited to very contrived examples with the numbers chosen to work out in especially simple ways, and few students became very proficient even at those. With a few Hewlett-Packard HP-35's at their disposal, I could give them *realistic* problems, with any old numbers, and more students got more of them right—by a dramatic margin. As a result they were able to leave the class, in most cases, with a considerably better feel for what decibels meant in the real world.

So what possible objection could I have to calculators? None whatever, as long as they are treated as an *extension* of basic skills and a practical substitute for tedious techniques in day-to-day use. But when they are allowed to *totally* replace even the most *basic* skills, that's another matter entirely.

Why?

A couple of years ago I was analyzing and tabulating the results of an *Analog* reader survey, using my HP-25 programmable calculator—when its rechargeable battery died. No replacement was available in time to get it back in operation that day, but the results *had* to be typed up and sent to the typesetter first thing the next morning. Doing them by hand was painfully slow, but it was possible. I did it. The deadline was met.

But what if I had never learned to add, subtract, multiply, and divide without the aid of a little box driven by mortal batteries?

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Calculators are not a problem. Absolute dependence on them is.

A similar argument could be made for virtually any tool. A tool, properly used to extend your built-in abilities, is a powerful asset. But to the extent that you can't get along without it, it's a liability—a potential weakness. As long as it's perfectly reliable, it's wonderful.

But how many perfectly reliable technologies can you name?

A calculator—or any particular tool—is only one example of a much more general vulnerability problem. A place like New York City is a much better example of the problem's true magnitude. Many New Yorkers think of their city as the very epitome of civilization; few seem to realize how fragile it is. Occasionally, as in the recent commuter rail strike, they get a small hint of that. With no trains running, people who had to get in or out of the city had to drive (further clogging roads on which congestion is a way of life) or use various combinations of buses and subways (which have the same vulnerabilities as the commuter trains). If all these systems succumbed at the same time . . .

An urban environment as large and dense as New York has evolved hand in hand with a whole network of technological support systems. Public transit is one of them; the numbers of people who circulate in New York simply couldn't be handled by private cars, and New York is one of the few places in this country where many residents neither own nor know how to drive one. Many native New Yorkers have never seen a farm or an open place wilder than Central Park. They get water from a tap to which someone else has piped it after suitable treatment, and have little idea what happens to their sewage after it disappears down the drain. Food comes from cans and boxes and display cases, and garbage is carted off to parts unknown. Heat and light come from slots in the wall, where they might as well have been put by the gods.

All this is very cozy as long as it works, but what happens when it doesn't? Failure of a single system does not particularly faze New Yorkers; it happens so often that the evolutionary process has included taking it in stride. To have the trains or the subways or garbagemen or *somebody* on strike is, as somebody said during the latest, "just a part of living in New York." But what if all or most of the systems failed at once, as they could in the event of a war or any of several possible natural disasters? How would people who have never seen the original sources of their food and drink and energy cope when suddenly forced to find and develop those sources for themselves?

The person who chooses to live in the heart of a big city and trust these matters to others gains thereby the freedom to devote his attention to things like the stock market and cultural events. But he pays a price. Unless he goes out of his way to develop and maintain it, he gives up the ability to fend for himself if and when he has to directly satisfy his most basic needs—which are the same as any farmer's or forager's. In contrast, I have friends who live in isolated rural locations, in cabins which they built by hand. They drink water which they piped in themselves, raise their own

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

A MATTER FOR MEN
Volume I in The War Against the Chtorr

David Gerrold

On a devastated near-future Earth, where the population has been decimated by plagues, a new threat emerges: the Chtorr. One thousand pounds of man-eating intelligence, these creatures from another star are impervious to conventional weapons. Yet they must be destroyed—no matter what, or who, stands in the way.

Hardcover 46493-0, $16.95
Trade paperback 46494-9, $6.95

TIMESCAPE

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

food, generate such electricity as they use, and meet many of their energy needs by nonelectrical means. They spend more time than city dwellers meeting basic needs. The stock market is seldom uppermost in their thoughts, and if they want to attend a concert they must travel some distance to get there. Many New Yorkers might find it hard to understand why they seem so comfortable and content, but they would no more want a New Yorker's life than he would want theirs. Lifestyles are largely a matter of taste.

But I know who I would give better odds to pull through a real, large-scale, civilization-crippling emergency.

One of the most important factors giving man an edge over other species has been his adaptability. Man, as a species, has been able to adapt to an extremely wide range of environments, not so much by changes in his personal make-up as by developing and adopting a wide range of appropriate technologies. The process has gone so far that human individuals now commonly live in almost totally artificial habitats, constructed and maintained almost entirely by other people. A typical inhabitant of one of these habitats—such as midtown Manhattan—is extremely well adapted to it. But he has paid Bronowski's price for adaptation. His adaptations are so specialized, and the environment they have evolved to fit is so far removed from the primal sources of sustenance and energy, that he is ill equipped to survive in any other environment. This is no problem as long as he stays where he is and the environment stays as it is. But since *all* environments are subject to change without notice, his position is risky. Adaptability would be safer.

STANLEY SCHMIDT ..... Editor
ELIZABETH MITCHELL ..... Managing Editor
RALPH RUBINO ..... Corporate Art Director
GERARD HAWKINS ..... Associate Art Director
TERRI CZECZKO .....Art Editor
CARL BARTEE .....Director of Manufacturing
CAROLE DIXON ..... Production Manager
IRIS TEMPLE ..... Director, Subsidiary Rights
BARBARA BAZYN Manager, Contracts & Permissions
MICHAEL DILLON ..... Circulation Director, Retail Marketing
ROBERT PATTERSON ..... Circulation Manager
PAUL PEARSON ..Newsstand Operations Manager
ROSE WAYNER .....Classified Ad Director
WILLIAM F. BATTISTA ..... Advertising Director

JOEL DAVIS
President & Publisher

CAROLE DOLPH GROSS
Vice President
Marketing & Editorial

LEONARD H. HABAS
Vice President
Circulation

FRED EDINGER
Vice President
Finance

ADVERTISING OFFICES

LOS ANGELES
(213) 785-3114

NEW YORK
(212) 557-9100

CHICAGO
(312) 346-0712

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

SF&F

"An extraordinary achievement."
—POUL ANDERSON

David Brin, the acclaimed author of SUNDIVER, spins a masterful saga of a Terran starship's struggle against rebellion and alien attack to save the greatest secret in galactic history. Blending vivid characters, non-stop action, state-of-the-art science and cosmic scope, STARTIDE RISING is an exceptional new science fiction novel by "one of the brightest lights on the SF horizon." (Gregory Benford)

"Not since Stapledon has a writer succeeded so well in conveying a sense of the strangeness of the universe and the infinite possibilities which space and time must hold."
—Poul Anderson

"Brin is a scientist who knows how to tell a story. That's a rare combination."
—Jerry Pournelle

STARTIDE RISING By DAVID BRIN

BANTAM. Now On Sale. $3.50
Also by David Brin **SUNDIVER** $2.50

Bantam Science Fiction and Fantasy: The Best of All Possible Worlds.

BANTAM BOOKS, INC., 666 Fifth Avenue, New York 10103
BANTAM BOOKS CANADA, INC., 60 St. Clair Avenue East, Suite 601, Toronto, Ontario M4T 1N5

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

But adaptability requires a wide range of knowledge, including many kinds which do not seem useful in the ordinary course of events. Obviously there are limitations; few of us these days have the time or inclination to become expert at making chipped flint arrowheads (though we should not dismiss doing so as a "primitive" skill of no possible future value). But it's asking for trouble to raise whole populations with no grounding at all in general survival skills, or no ability to perform simple tasks of everyday life without sophisticated technological aids. The range of tasks now included in "everyday life" is such that it isn't practical to teach everybody to do all of them without technical aids, and whether it is worthwhile to teach unaided methods of doing this or that will be increasingly debatable. But in making such decisions —setting priorities—we need to be very selective and consider very critically before electing to trade *any* personal ability for an absolute dependence on a machine. At the moment, long division seems to me one skill which is sufficiently worth having and sufficiently cheap to keep that it would be foolish to throw it away.

Tools can be divided into two rough categories according to the way in which they extend personal abilities. Some, like space shuttles, make it *possible* to do jobs which *cannot* be done without them. Others, like chain saws and calculators, simply make it *easier* to do jobs which *can* be done without them. With a tool of the second type, there is a strong temptation to turn the job over entirely to the tool and forget about doing it any other way. But when the tool, for whatever reason, is unavailable, only the person who has refused to yield to that temptation will still be able to function. To him, a tool is something to be used to full advantage when it is available, but its purpose is to *supplement* his own abilities, not to *replace* them.

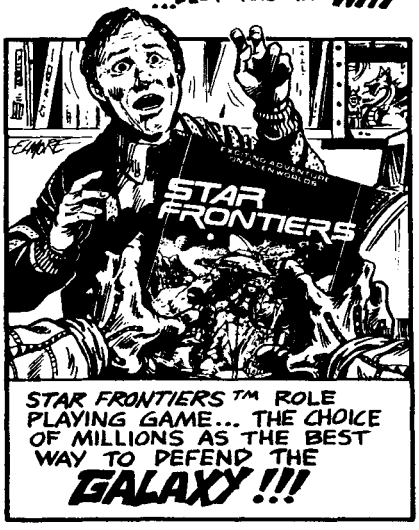
In that realization lies the key to personal adaptability—and, in many easily imaginable cases, survival. Technology itself is not a trap, but it can unwittingly become a very tempting bait—for a trap which may go unperceived until it has been sprung. ■

● To own a bit of ground, to scratch it with a hoe, to plant seeds, and watch the renewal of life—this is the commonest delight of the race, the most satisfactory thing a man can do . . . Broad acres are a patent of nobility; and no man but feels more of a man in the world if he have a bit of ground . . . However small it is on the surface, it is four thousand miles deep; and that is a very handsome property.

Charles Dudley Warner, *My Summer in a Garden*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

STAR FRONTIERS
...FROM THE VERY CENTER OF THE GREAT SPIRAL GALAXY... ON A QUEST WITH BUT ONE INTENTION...
Toy & Hobby Shop
... TO A PLANET FORBIDDEN, DRIVEN BY A FORCE UNSTOPPABLE...
TOYS GAMES
...NOT KNOWING WHY- BUT PROGRAMED TO PURCHASE...



From TSR Hobbies, Inc. Producers of the DUNGEONS & DRAGONS® game phenomenon.

For your FREE poster/catalog complete this coupon and send it to:

TSR Hobbies, Inc.

TSR Hobbies, Inc. POB 756, C187AN2 Lake Geneva, WI 53147	TSR Hobbies, (UK) Ltd. The Mill, Rathmore Road Cambridge, ENGLAND CB1 4AD

Name _____

Address _____

City _____ State _____ Zip _____

STAR FRONTIERS is a trademark owned by TSR Hobbies, Inc. ©1983 TSR Hobbies, Inc. All Rights Reserved.

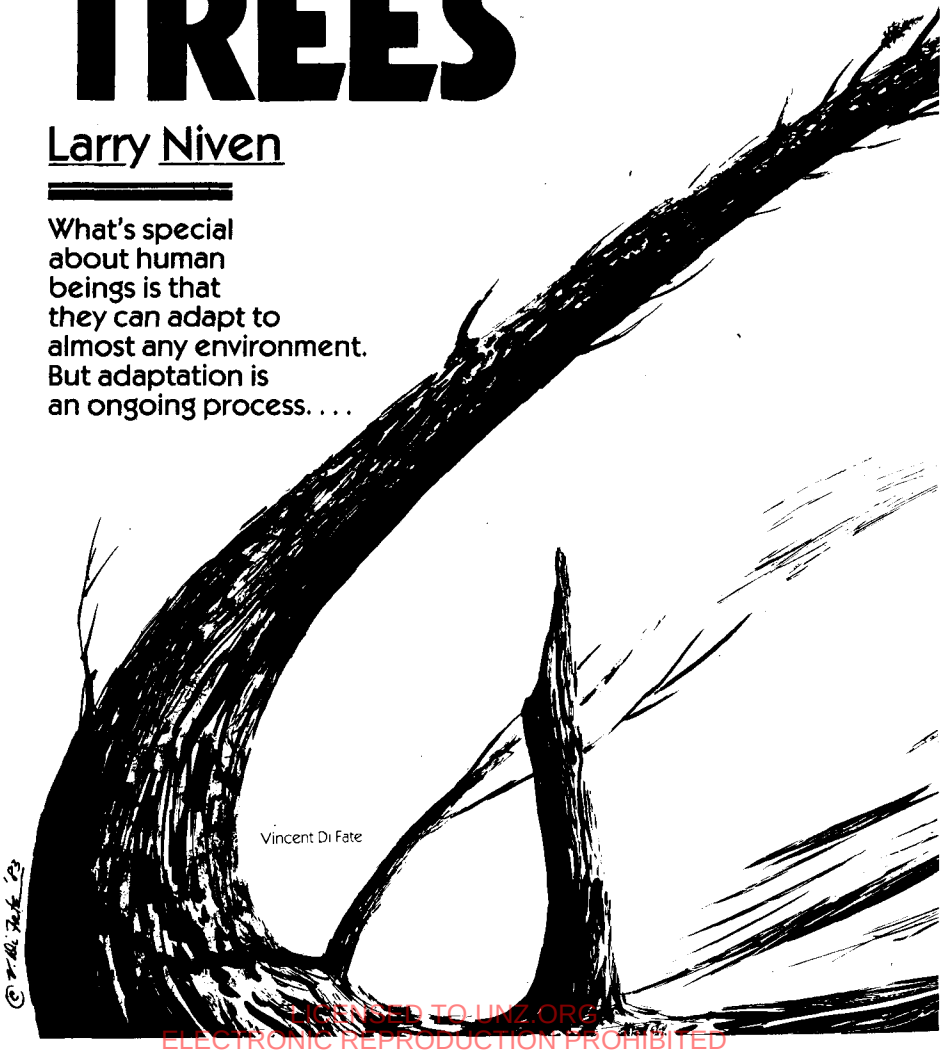
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

THE INTEGRAL TREES

Part One of Four

Larry Niven

What's special about human beings is that they can adapt to almost any environment. But adaptation is an ongoing process. . . .



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

PROLOGUE: *DISCIPLINE*

It was taking too long, much longer than he had expected. Sharls Davis Kendy had not been an impatient man. After the change he had thought himself immune to impatience. But it was taking too long! What were they *doing* in there?

His senses were not limited. Sharls's telescopic array was powerful; he could sense the full electromagnetic spectrum, from microwave up to X-ray. But the Smoke Ring balked his view. It was a storm of wind, dust, clouds of water vapor, huge rippling drops of dirty water or thin mud, masses of free-floating rock; and dots and motes and clumps of green, green surfaces on the drops and the rocks, green tinges of algae in the clouds; trees shaped like integration signs, oriented radially to the neutron star, and tufted with green at both ends; whale-sized creatures with vast mouths, to skim the green-tinged clouds . . .

Life was everywhere in the Smoke Ring. Claire Dalton had called it a Christmas wreath. Claire had been a very old woman before the State revived her as a corpsicle. The others had never seen a Christmas wreath; nor had Kendy. What they had seen, half a thousand years ago, was a perfect smoke ring several tens of thousands of kilometers across, with a tiny hot pinpoint in its center.

Their reports had been enthusiastic. Life was DNA-based; the air was not only breathable, but tasted fine. . . .

Discipline presently occupied the point of gravitational neutrality behind Goldblatt's World, the L2 point. Sharls was too close to see more than green-tinged cloudscape covering half the sky. Directly below was a vast distorted whirlpool of storm hiding the residue of a gas giant planet, a rocky nugget two and a half times the mass of Earth.

Sharls would not enter that inner region. The maelstrom of forces could damage his ship. He couldn't guess how long the seeder ramship must survive to accomplish his mission. He had waited more than half a thousand years already. The L2 point was still within the gas torus of which the Smoke Ring was only the densest part. *Discipline* was subject to slow erosive forces. He couldn't last forever in this place.

At least the crew were not extinct.

That would have hurt him terribly.

He had done his duty. Their ancestors had been mutineers, a potential threat to the State itself. To re-educate their descendants was his goal, but if the Smoke Ring had killed them . . . well, it would not have surprised him. It took more than breathable air to keep men alive. The Smoke Ring was green with the life that had evolved for that queer environment. Native life might well have killed off those Johnny-come-lately rivals, the erstwhile crew of the seeder ramship *Discipline*.

Sharls would have grieved, but he would have been free to return home.

They'd call me an obsolete failure, he thought gloomily, while his instruments sought a particular frequency in the radio range. *A thousand years out of date by the time I'm home. They'd scrap the computer for certain. And the program? The Sharls Davis Kendy program might be copied and kept for the use of historians. Or not.*

But they hadn't died. Eight Cargo and

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Repair Modules had gone with the original mutineers. Time and the corrosive environment must have ruined the CARMs; but at least one was still operational. Someone had been using it as late as six years ago. And . . . there: the light he'd been searching for. For a moment it reached him clearly: the frequency of hydrogen burning with oxygen.

He fired a maser in ultrashort, high-powered pulses. "Kendy for the State. Kendy for the State. Kendy for the State."

The response came four seconds later, sluggish, weak and blurred. Kendy pinpointed it and fine-focussed his telescopes while he sent his next demand.

"Status. Tell me three times."

Kendy sorted the garbled response through a noise eliminator program. The CARM was on manual, mostly functional, using attitude jets only, operating well inside its safety limits. Once it had been a simplified recording of Kendy's own personality. Now the program was deteriorating, growing stupid and erratic.

"Course record for the past hour."

It came. The CARM had been free-falling at low relative velocity up to forty minutes ago. Then, low-acceleration maneuvers, a course that looked like a dropped plate of spaghetti, a mad waste of stored fuel. Malfunction? Or . . . it could have been a dogfight-style battle.

War?

"Switch to my command."

Four seconds; then a signal like a scream of bewildered agony. Massive malfunction.

The crew must have disconnected the autopilot system on every one of the CARMs, half a thousand years ago. It had still been worth a try, as was his next message.

"Give me video link with crew."

"Denied."

Oh *ho!* The video link hadn't been disconnected! A block must have been programmed in, half a thousand years ago, by the mutineers. Certainly their descendants wouldn't know how to do that.

A block might be circumvented, eventually.

The CARM was too small to see, of course, but it must be somewhere near that green blob not far from Goldblatt's World. A cotton candy forest. Plants within the Smoke Ring tended to be fluffy, fragile. They spread and divided to collect as much sunlight as possible, without worrying about gravity.

For half a thousand years Kendy had watched for signs of a developing civilization . . . for regular patterns in the floating masses, or infrared radiation from manufacturing centers, or industrial pollution: metal vapor, carbon monoxide, oxides of nitrogen. He hadn't found any of that. If the children of *Discipline*'s crew were developing beyond savagery, it was not in any great numbers.

But they lived. Someone was using a CARM.

If only he could see them! Or talk to them— "Give me voice-over. Citizen, this is Kendy for the State. Speak, and your reward will be beyond the reach of your imagination."

"Amplify. Amplify. Amplify," sent the CARM.

Kendy was already sending at full

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

amplification. "Cancel voice-over," he sent.

Not for the first time, he wondered if the Smoke Ring could have proved *too* kindly an environment. Creatures evolved in free fall would not have human strength. Humans could be the most powerful creatures in the Smoke Ring: happy as clams in there, and about as active. Civilization develops to protect against the environment.

Or against other men. War would be a hopeful sign. . . .

If he could *know* what was going on! Kendy could perturb the environment in a dozen different ways. Cast them out of Eden and see what happened. But he dared not. He didn't know enough.

Kendy waited.

CHAPTER 1: QUINN TUFT

Gavving could hear the rustling as his companions tunneled upward. They stayed alongside the great flat wall of the trunk. Finger-thick spine branches sprouted from the trunk, divided endlessly into wire-thin branchlets, and ultimately flowered into foliage like green cotton, loosely spun to catch every stray beam of sunlight. Some light filtered through as green twilight.

Gavving tunneled through a universe of green cotton candy.

Hungry, he reached deep into the web of branchlets and pulled out a fisful of foliage. It tasted like fibrous spun sugar. It cured hunger, but what Gavving's belly wanted was meat. Even so, its taste was *too* fibrous . . . and the green of it was too brown, even at the edges of the Tuft, where sunlight fell.

He ate it anyway, and went on.

The rising howl of the wind told him he was nearly there. A minute later his head broke through into wind and sunlight.

The sunlight stabbed his eyes, still red and painful from this morning's allergy attack. It always got him in the eyes and sinuses. He squinted and turned his head, and sniffled, and waited while his eyes adjusted. Then, twitchy with anticipation, he looked up.

Gavving was fourteen years old, as measured by passings of the Sun behind Voy. He had never been above Quinn Tuft until now.

The trunk went straight up, straight out from Voy. It seemed to go out forever, a vast brown wall that narrowed to a cylinder, to a dark line with a gentle westward curve to it, to a point at infinity—and the point was tipped with green. The far tuft.

A cloud of brown-tinged green dropped away below him, spreading out into the main body of the tuft. Looking east, with the wind whipping his long hair forward, Gavving could see the branch emerging from its green sheath as a half-klomter of bare wood: a slender fin.

Harp's head popped out, and his face immediately dipped again, out of the wind. Laython next, and he did the same. Gavving waited. Presently their faces lifted. Harp's face was broad, with thick bones, its brutal strength half-concealed by golden beard. Laython's long dark face was beginning to sprout strands of black hair.

Harp called, "We can crawl around to lee of the trunk. East. Get out of this wind."

The wind blew always from the west, always at gale velocities. Laython peered

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Where two heroic women search for identity in a world of changing cultures.

Five years in the making, Marion Zimmer Bradley's new masterwork sweeps you into the intensely personal and controversial struggle of two women—who must choose between ancient values and those of the future.

DAW BOOKS **DAW Original** **$3.50** NAL

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

windward between his fingers. He bellowed, "Negative! How would we catch anything? Any prey would come right out of the wind!"

Harp squirmed through the foliage to join Laython. Gavving shrugged and did the same. He would have liked a windbreak . . . and Harp, ten years older than Gavving and Laython, was nominally in charge. It seldom worked out that way.

"There's nothing to catch," Harp told them. "We're here to guard the trunk. Just because there's a drought doesn't mean we can't have a flash flood. Suppose the tree brushed a pond?"

"*What* pond? Look around you! There's *nothing* near us. Voy is too close. Harp, you've said so yourself!"

"The trunk blocks half our view," Harp said mildly.

The bright spot in the sky, the sun, was drifting below the western edge of the tuft. And in that direction were no ponds, no clouds, no drifting forests . . . . nothing but blue-tinged white sky split by the white line of the Smoke Ring, and on that line, a roiled knot that must be Gold.

Looking up, out, he saw more of nothing . . . faraway streamers of cloud shaping a whorl of storm . . . a glinting fleck that might indeed have been a pond, but it seemed even more distant than the green tip of the integral tree. There would be no flood.

Gavving had been six years old when the last flood came. He remembered terror, panic, frantic haste. The tribe had burrowed east along the branch, to huddle in the thin foliage where the tuft tapered into bare wood. He remembered a roar that drowned the wind, and the mass of the branch itself shuddering endlessly. Gavving's father and two apprentice hunters hadn't been warned in time. They had been washed into the sky.

Laython started off around the trunk, but in the windward direction. He was half out of the foliage, his long arms pulling him against the wind. Harp followed. Harp had given in, as usual. Gavving snorted and moved to join them.

It was tiring. Harp must have hated it. He was using claw sandals, but he must have suffered, even so. Harp had a good brain and a facile tongue, but he was a dwarf. His torso was short and burly; his muscular arms and legs had no reach, and his toes were mere decoration. He stood less than two meters tall. The Grad had once told Gavving, "Harp looks like the pictures of the Founders in the log. We all looked like that once."

Harp grinned back at him, though he was puffing. "We'll get you some claw-sandals when you're older."

Laython grinned too, superciliously, and sprinted ahead of them both. He didn't have to say anything. Claw-sandals would only have hampered his long, prehensile toes.

Night had cut the illumination in half. Seeing was easier, with the sunglare around on the other side of Voy. The trunk was a great brown wall three klomters in circumference. Gavving looked up once, and was disheartened at their lack of progress. Thereafter he kept his head bent to the wind, clawing his way across the green cotton, until he heard Laython yell.

"Dinner!"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

A quivering black speck, a point to port of windward. Laython said, "Can't tell what it is."

Harp said, "It's trying to miss. Looks big."

"It'll go around the other side! Come on!"

They crawled, fast. The quivering dot came closer. It was long and narrow and moving tail-first. The great translucent fin blurred with speed as it tried to win clear of the trunk. The slender torso was slowly rotating.

The head came in view. Two eyes glittered behind the beak, one hundred and twenty degrees apart.

"Swordbird," Harp decided. He stopped moving.

Laython called, "Harp, what are you doing?"

"Nobody in his right mind goes after a swordbird."

"It's still meat! And it's probably starving too, this far in!"

Harp snorted. "Who says so? The Grad? The Grad's full of theory, but he doesn't have to hunt."

The swordbird's slow rotation exposed what should have been its third eye. What showed instead was a large, irregular, fuzzy green patch. Laython cried, "Fluff! It's a head injury that got infected with fluff. The thing's injured, Harp!"

"That isn't an injured turkey, boy. It's an injured *swordbird.*"

Laython was half again Harp's size, and the Chairman's son to boot. He was not easy to discipline. He wrapped long, strong fingers around Harp's shoulder and said, "We'll miss it if we wait here arguing! I say we go for Gold." And he stood up.

The wind smashed at him. He wrapped toes and one fist in branchlets, steadied himself, and semaphored his free arm. "Hiyo! Swordbird! Meat, you copsik, *meat!*"

Harp made a sound of disgust.

It would surely see him, waving in that vivid scarlet blouse. Gavving thought, hopefully, *We'll miss it, and then it'll be past.* But he would not show cowardice on his first hunt.

He pulled his line loose from his back. He burrowed into the foliage to pound a spike into solid wood, and moored the line to it. The middle was attached to his waist. Nobody ever risked losing his line. A hunter who fell into the sky might still find rest somewhere, if he had his line.

The creature hadn't seen them. Laython swore. He hurried to anchor his own line. The business end was a grapnel: hardwood from the finned end of the branch. Laython swung the grapnel round his head, yelled and flung it out.

The swordbird must have seen, or heard. It whipped around, mouth gaping, triangular tail fluttering as it tried to gain way to starboard, to reach their side of the trunk. Starving, yes! Gavving hadn't grasped that a creature could see him as *meat* until that moment.

Harp frowned. "It could work. If we're lucky it could smash itself against the trunk."

The swordbird seemed bigger every second: bigger than a man, bigger than a hut; all mouth and wings and tail. The tail was a translucent membrane enclosed in a *V* of bone spines with serrated edges. What was it doing this far in? Swordbirds fed on creatures that fed in the drifting forests, and there were

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

few of these, so far in toward Voy. Little enough of anything. The creature did look gaunt, Gavving thought; and there was that soft green carpet over one eye.

Fluff was a green plant parasite that grew on an animal until the animal died. It attacked humans, too. Everybody got it sooner or later, some more than once. But humans had the sense to stay in shadow until the fluff withered and died.

Laython could be right. A head injury, sense of direction fouled up . . . and it was meat, a mass of meat as big as the bachelors' longhut. It must be ravenous . . . and now it turned to face them.

An isolated mouth came toward them: an elliptical field of teeth, expanding.

Laython coiled line in frantic haste. Gavving saw Harp's line fly past him and, tearing himself out of his paralysis, he threw his own weapon.

The swordbird whipped around, impossibly fast, and snapped up Gavving's harpoon like a tidbit. Harp whooped. Gavving froze for an instant; then his toes dug into the foliage while he hauled in line. *He'd hooked it.*

The creature didn't try to escape: it was still fluttering toward them.

Harp's grapnel grazed its side and passed on. Harp yanked, trying to hook the beast, and missed again. He reeled in line for another try.

Gavving was armpit-deep in branchlets and cotton, toes digging deeper, hands maintaining his deathgrip on the line. With eyes on him, he continued to behave as if he *wanted* contact with the killer beast. He bellowed, "Harp, where can I hurt it?"

"Eye sockets, I guess."

The beast had misjudged. Its flank smashed bark from the trunk above their heads, dreadfully close. The trunk shuddered. Gavving howled in terror. Laython howled in rage, and threw his grapnel ahead of it.

It grazed the swordbird's flank. Laython pulled hard on the line and sank the hardwood tines deep in flesh.

The swordbird's tail froze. Perhaps it was thinking things over, watching them with two good eyes, while the wind pulled it west.

Laython's line went taut. Than Gavving's. Spine branches ripped through Gavving's inadequate toes. Then the immense mass of the beast had pulled him into the sky.

His own throat closed tight, but he heard Laython shriek. Laython too had been pulled loose.

Torn branchlets were still clenched in Gavving's toes. He looked down into the cushiony expanse of the tuft, wondering whether to let go and drop. But his line was still anchored . . . and wind was stronger than tide; it could blow him past the tuft, past the entire branch, out and away. Instead he crawled along the line, away from their predator-prey.

Laython wasn't retreating. He had readied his harpoon and was waiting.

The swordbird decided. Its body snapped into a curve. The serrated tail slashed effortlessly through Gavving's line. The swordbird flapped hard, making west now. Laython's line went taut; then branchlets ripped and his line pulled free. Gavving snatched for it and missed.

He might have pulled himself back to safety then, but he continued to watch.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The super new novel of Xanth!

DRAGON ON A PEDESTAL

PIERS ANTHONY

There was trouble in Xanth again—all kinds of trouble, in fact.

The Gap Dragon had escaped from the Gap and was ravaging the land, the forget-spell was giving amnesia to all it touched, Good Magician Humfrey had overdosed on water from the Fountain of Youth and was a helpless baby, and Ivy, three year-old daughter of King Dor and Queen Irene, was lost in the path leading to where the Gap dragon was seeking dinner!

cover illustration by Darrell K. Sweet

On Sale in October

#1 Publisher of Science Fiction and Fantasy
Published by Ballantine Books

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Laython poised with spear ready, his other arm waving in circles to hold his body from turning, as the predator flapped toward him. Almost alone among the creatures of the Smoke Ring, men have no wings.

The swordbird's body snapped into a U. Its tail slashed Laython in half almost before he could move his spear. The beast's mouth snapped shut four times, and Laython was gone. Its mouth continued to work, trying to deal with Gavving's harpoon in its throat, as the wind carried it east.

The Scientist's hut was like all of Quinn Tribe's huts: live spine branches fashioned into a wickerwork cage. It was bigger than some, but there was no sense of luxury. The roof and walls were a clutter of paraphernalia stuck into the wickerwork: boards and turkey quills and red tuftberry dye for ink, tools for teaching, tools for science, and relics from the time before men left the stars.

The Scientist entered the hut with the air of a blind man. His hands were bloody to the elbows. He scraped at them with handfuls of foliage, talking under his breath. "Damn, damn drillbits. They just burrow in, no way to stop them." He looked up. "Grad?"

" 'Day. Who were you talking to, yourself?"

"Yes." He scrubbed at his arms, ferociously, then hurled the wads of bloody foliage away from him. "Martal's dead. A drillbit burrowed into her. I probably killed her myself, digging it out, but she'd have died anyway . . . you can't leave drillbit eggs. Have you heard about the expedition?"

"Yes. Barely. I can't get anyone to tell me anything."

The Scientist pulled a handful of foliage from the wall and tried to scrub the scalpel clean. He hadn't looked at the Grad. "What do you think?"

The Grad had come in a fury, and grown yet angrier while waiting in an empty hut. He tried to keep that out of his voice. "I think the Chairman's trying to get rid of some citizens he doesn't like. What I want to know is, why me?"

"The Chairman's a fool. He thinks science could have stopped the drought."

"Then you're in trouble too?" The Grad got it then. "You blamed it on me."

The Scientist looked at him at last. The Grad thought he saw guilt there, but the eyes were steady. "I let him think you were to blame, yes. Now, there are some things I want you to have—"

Incredulous laughter was his answer. "What, more gear to carry up a hundred klomters of trunk?"

"Grad . . . Jeffer. What have I told you about the tree? We've studied the universe together, but the most important thing in it is the tree. Didn't I teach you that everything that lives has a way of staying near the Smoke Ring median, where there's air and water and soil?"

"Everything but trees and men."

"Integral trees have a way. I taught you."

"I . . . had the idea you were only guessing. . . . Oh, I see. You're willing to bet *my* life."

The Scientist's eyes dropped. "I suppose I am. But if I'm right, there won't be anything left but you and the people

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

who go with you. Jeffer, this could be *nothing*. You could all come back with . . . whatever we need: breeding turkeys, some kind of meat animal living on the trunk, I don't know—''

''But you don't think so.''

''No. That's why I'm giving you these.''

He pulled treasures from the spine-branch walls: a glassy rectangle a quarter meter by half a meter, flat enough to fit into a pack; four boxes each the size of a child's hand. The Grad's response was a musical ''O-o-oh.''

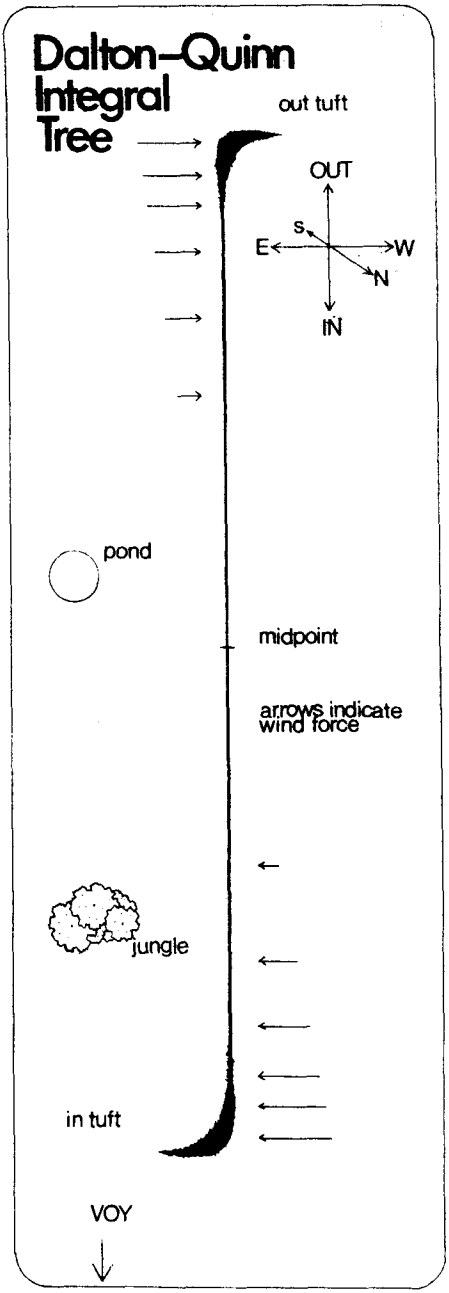
''You'll decide for yourself whether to tell any of the others what you're carrying. Now let's do one last drill session.'' The Scientist plugged a cassette into the reader screen. ''You won't have much chance to study on the trunk.''

PLANTS

Life pervades the Smoke Ring, but is neither dense nor massive. In the free-fall environment plants can spread their greenery widely to catch maximum sunlight and passing water and soil, without bothering about structural strength. We find at least one exception. . . .

These integral trees grow to tremendous size. The plant forms a long trunk under terrific tension, tufted with green at both ends, stabilized by the tide. They form thousands of radial spokes circling Levoy's Star. They grow up to a hundred kilometers in length, with up to a fifth of a gee in tidal ''gravity'' at the tufts, and perpetual hurricane winds.

The winds derive from simple orbital mechanics. They blow from the west at the inner tuft, and from the east at the outer tuft (where in *is toward Levoy's Star, as usual). The structure bows to the winds, curving into a nearly hori-*



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

zontal branch at each end. The foliage sifts fertilizer from the wind. . . .

The medical dangers of life in free fall are well known. If Discipline *has indeed abandoned us, if we are indeed marooned within this weird environment, we could do worse than to settle the tufts of the integral trees. If the trees prove more dangerous than we anticipate, escape is easy. We need only jump and wait to be picked up.*

The Grad looked up. "They really didn't know very much about the trees, did they?"

"No. But, Jeffer, they had seen trees from outside."

That was an awesome thought. While he chewed it, the Scientist said, "I'm afraid you may have to start training your own Grad, and soon."

Jayan sat cross-legged, coiling lines. Sometimes she looked up to watch the children. They had come like a wind through the Commons, and the wind had died and left them scattered around Clave. He wasn't getting much work done, though it seemed he was trying.

The girls loved Clave. The boys imitated him. Some just watched, others buzzed around him, trying to help him assemble the harpoons and the spikes, or asking an endless stream of questions. "What are you doing? Why do you need so many harpoons? And all this rope? Is it a hunting trip?"

"I can't tell you," Clave said with just the proper level of regret. "King, where have you been? You're all sticky."

King was a happy eight-year-old painted in brown dust. "We went underside. The foliage is greener there. Tastes better."

"Did you take lines? Those branches aren't as strong as they used to be. You could fall through. And did you take a grownup with you?"

Jill, nine, had the wit to distract him. "When's dinner? We're still hungry."

"Aren't we all." Clave turned to Jayan. "We've got enough packs, we won't be carrying food, we'll find water on the trunk . . . claw sandals . . . jet pods, I'm glad we got those . . . hope we've got enough spikes . . . what else do we need? Is Jinny back?"

"No. What did you send her for, anyway?"

"Rocks. I gave her a net for them, but she'll have to go all the way to the treemouth. I hope she finds us a good grindstone."

Jayan didn't blame the children. She loved Clave, too. She would have kept him for herself, if she could . . . if not for Jinny. Sometimes she wondered if Jinny ever felt that way.

"Mmm . . . we'll pick some foliage before we leave the tuft—"

Jayan stopped working. "Clave, I never thought of that. There's no foliage on the trunk! We won't have *anything* to eat!"

"We'll find something. That's why we're going," Clave said briskly. "Thinking of changing your mind?"

"Too late," Jayan said. She didn't add that she had never wanted to go at all. There was no point, now.

"I could bust you loose. Jinny too. The citizens like you, they wouldn't let—"

"I won't stay." Not with Mayrin and the Chairman here, and Clave gone. She looked up and said, "Mayrin."

Clave's wife stood in the half-shad-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ows on the far side of the commons. She might have been there for some time. She was seven years older than Clave, a stocky woman with the square jaw of her father, the Chairman. She called, "Clave, mighty hunter, what game are you playing with this young woman when you might be finding meat for the citizens?"

"Orders."

She approached, smiling. "The expedition. My father and I arranged it together."

"If you'd like to believe that, feel free."

The smile slipped. "Copsik! You've mocked me too long, Clave. You and *them*. I hope you fall into the sky."

"I hope I don't," Clave said mildly. "Would you like to assist our departure? We need blankets. Better have an extra. Nine."

"Fetch them yourself," Mayrin said, and stalked away.

Here in the main depths of Quinn Tuft there were tunnels through the foliage. Huts nestled against the vertical flank of the branch, and the tunnels ran past. Now Harp and Gavving had room to walk, or something like it. In the low tidal pull they bounced on the foliage as if it and they were made of air. The branchlets around the tunnels were dry and nude, their foliage stripped for food.

Changes. The days had been longer before the passing of Gold. It used to be two days between sleeps; now it was eight. The Grad had tried to explain why, once, but the Scientist had caught them at it and whacked the Grad for spilling secrets and Gavving for listening.

Harp thought that the tree was dying. Well, Harp was a teller, and world-sized disasters make rich tales. But the Grad thought so too . . . and Gavving *felt* like the world had ended. He almost wanted it to end, before he had to tell the Chairman about his son.

He stopped to look into his own dwelling, a long half-cylinder, the bachelors' longhut. It was empty. Quinn Tribe must be gathered for the evening meal.

"We're in trouble," Gavving said, and sniffled.

"Sure we are, but there's no point in acting like it. If we hide, we don't eat. Besides, we've got this." Harp hefted the dead musrum.

Gavving shook his head. It wouldn't help. "You should have stopped him."

"I couldn't." When Gavving didn't answer, Harp said, "Four days ago the whole tribe was throwing lines into a *pond,* remember? A pond no bigger than a big hut. As if we could pull it to us. We didn't think that was stupid till it was gone past, and nobody but Clave thought to go for the cookpot, and by the time he got back—"

"I wouldn't send even Clave to catch a swordbird."

"Twenty-twenty," Harp jeered. The taunt was archaic, but its meaning was common. *Any fool can foresee the past.*

An opening in the cotton: the turkey pen, with one gloomy turkey still alive. There would be no more unless a wild one could be captured from the wind. Drought and famine . . . Water still ran down the trunk sometimes, but never enough. Flying things still passed, meat to be drawn from the howling wind; but

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

rarely. The Tribe could not survive on the sugary foliage forever.

"Did I ever tell you," Harp asked, "about Glory and the turkeys?"

"No." Gavving relaxed a little. He needed a distraction.

"This was twelve or thirteen years back, before Gold passed by. Things didn't fall as fast then. Ask the Grad to tell you why, 'cause I can't, but it's true. So if she'd just fallen on the turkey pen it wouldn't have busted. But Glory was trying to move the cookpot. She had it clutched in her arms, and it masses three times what she does, and she lost her balance and started *running* to keep it from hitting the ground. *Then* she smashed into the turkey pen.

"It was as if she'd thought it out in detail. The turkeys were all through the Clump and into the sky. We got maybe a third of them back. That was when we took Glory off cooking duties."

Another hollow, a big one: three rooms shaped from spine branches. Empty. Gavving said, "The Chairman must be almost over the fluff."

"It's night," Harp answered.

Night was only a dimming while the far arc of the Smoke Ring filtered the sunlight; but a cubic klomter of foliage blocked light too. A victim of fluff could come out at night long enough to share a meal.

"He'll see us come in," Gavving said. "I wish he were still in confinement."

There was firelight ahead of them now. They pressed on, Gavving sniffling, Harp trailing the musrum on his line. When they emerged into the Commons their faces were dignified, and their eyes avoided nobody.

The Commons was a large open area, bounded by a wickerwork of branchlets. Most of the tribe formed a scarlet circle with the cookpot in the center. Men and women wore blouses and pants dyed with the scarlet the Scientist made from tuftberries, and sometimes decorated with black. That red would show vividly anywhere within the tuft. Children wore blouses only.

All were uncommonly silent.

The cookfire had nearly burned out, and the cookpot—an ancient thing, a tall transparent cylinder with a lid of the same material—retained no more than a double handful of stew.

The Chairman's chest was still half-covered in fluff, but the patch had contracted and turned mostly brown. He was a square-jawed, brawny man in middle age, and he looked unhappy, irritable. Hungry. Harp and Gavving went to him, handed him their catch. "Food for the Tribe," Harp said.

Their catch looked like a fleshy mushroom, with a stalk half a meter long, and sense organs and a coiled tentacle under the edge of the cap. A lung ran down the center of the stalk/body to give the thing jet propulsion. Part of the cap had been ripped away, perhaps by some predator; the scar was half-healed. It looked far from appetizing, but society's law bound the Chairman too.

He took it. "Tomorrow's breakfast," he said courteously. "Where's Laython?"

"Lost," Harp said, before Gavving could say, "Dead."

The Chairman looked stricken. "How?" Then, "Wait. Eat first."

That was common courtesy for returning hunters; but for Gavving the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

We're No Longer Simply AMAZING™ SCIENCE FICTION STORIES

NEW AUTHORS AND A WHOLE NEW LOOK

AMAZING Magazine is now part of Dragon Publishing, a division of TSR Hobbies, which is known for its creation of the inner-space DUNGEONS & DRAGONS® game phenomenon. We're sparing no expense to bring you the best works from the finest authors and artists in the science fiction field. As a sample, our featured writers list will include Gene Wolfe, Poul Anderson, Robert Silverberg, Larry Niven, Gregory Benford and Tanith Lee. Artists include Michael Whelan, Kelly Freas and Stephen Fabian. TSR and AMAZING Magazine... the best of both worlds!

OUR NEW EDITOR.

Four-time Hugo Award winner, George Scithers, former editor of ISAAC ASIMOV'S SCIENCE FICTION MAGAZINE, has joined AMAZING Magazine. Subscribe today and have AMAZING Magazine delivered to your door bi-monthly for only $9.00*. Or, two years for just $16.00*. * U.S. Currency

DUNGEONS & DRAGONS® and AMAZING™ are trademarks owned by TSR Hobbies, Inc.
©1983 TSR Hobbies, Inc. All Rights Reserved.

AMAZING™ MAGAZINE
SUBSCRIPTION DEPT., 184 **AN6**
BOX 110 LAKE GENEVA, WI 53147

Enclosed is $ _____ For _____ Year(s)

Name _____

Address _____

City _____

State _____ Zip _____

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

waiting was torture. They were given scooped-out seed pods containing a few mouthfuls of greens and turkey meat in broth. They ate with hungry eyes on them, and they handed the gourds back as soon as possible.

"Now talk," the Chairman said.

Gavving was glad when Harp took up the tale. "We left with the other hunters, and climbed along the trunk. Presently we could raise our heads into the sky and see the bare trunk stretching out to infinity—"

"My son is lost and you give me poetry?"

Harp jumped. "Your pardon. There was nothing on our side of the trunk, neither of danger nor salvation. We started around the trunk. Then Laython saw a swordbird, far west and borne toward us on the wind."

The Chairman's voice was only half-controlled. "You went after a swordbird?"

"There is famine in Quinn Tuft. We've fallen too far in, too far toward Voy, the Scientist says so himself. No beasts fly near, no water trickles down the trunk—"

"Am I not hungry enough to know this myself? Every baby knows better than to hunt a swordbird. Well, go on."

Harp told it all, keeping his language lean, passing lightly over Laython's disobedience, letting him show as the doomed hero. "We saw Laython and the swordbird pulled east by the wind, along a klomter of naked branch, then beyond. There was nothing we could do."

"But he has his line?"

"He does."

"He may find rest somewhere," the Chairman said. "A forest somewhere. Another tree . . . he could anchor at the median and go down . . . well. He's lost to Quinn Tribe at least."

Harp said, "We waited in the hope that Laython might find a way to return, to win out and moor himself along the trunk, perhaps. Four days passed. We saw nothing but a musrum borne on the wind. We cast our grapnels and I hooked the thing."

The Chairman looked ill with disgust. Gavving heard in his mind, *Have you traded my son for musrum meat?* But the Chairman said, "You are the last of the hunters to return. You must know of today's events. First, Martal has been killed by a drillbit."

Martal was an older woman, Gavving's father's aunt. A wrinkled woman who was always busy, too busy to talk to children, she had been Quinn Tribe's premier cook. Gavving tried not to picture a drillbit boring into her guts. And while he shuddered, the Chairman said, "After five days' sleep we will assemble for Martal's last rites. Second. The Council has decided to send a full hunting expedition up the trunk. They must not return without a means to our survival. Gavving, you will join the expedition. You'll be informed of your mission in detail after the funeral."

CHAPTER 2: LEAVETAKING

The treemouth was a funnel-shaped pit thickly lined with dead-looking, naked spine branches. The citizens of Quinn Tuft nested in an arc above the nearly vertical rim. Fifty or more were

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

gathered to say goodby to Martal. Almost half were children.

West of the treemouth was nothing but sky. The sky was all about them, and there was no protection from the wind, here at the westernmost point of the branch. Mothers folded their babes within their tunics. Quinn Tribe showed like scarlet tuftberries in the thick foliage around the treemouth.

Martal was among them, at the lower rim of the funnel, flanked by four of her family. Gavving studied the dead woman's face. Almost calm, he thought, but with a last lingering trace of horror. The wound was above her hip: a gash made not by the drillbit, but by the Scientist's knife as he dug for it.

A drillbit was a tiny creature, no bigger than a man's big toe. It would fly out of the wind too fast to see, strike and burrow into flesh, leaving its gut as an expanding bag that trailed behind it. If left alone it would eventually burrow through and depart, tripled in size, leaving a clutch of eggs in the abandoned gut.

Looking at Martal made Gavving queasy. He had lain too long awake, slept too little; his belly was already churning as it tried to digest a breakfast of musrum stew.

Harp edged up beside him, shoulder-high to Gavving. "I'm sorry," he said.

"For what?" Though Gavving knew what he meant.

"You wouldn't be going if Laython wasn't dead."

"You think this is the Chairman's punishment. All right, I thought so too, but . . . wouldn't you be going?"

Harp spread his hands, uncharacteristically at a loss for words.

"You've got too many friends."

"Sure, I talk good. That could be it."

"You could volunteer. Have you thought of the stories you could bring back?"

Harp opened his mouth; closed it, shrugged.

Gavving dropped it. He had wondered, and now he knew. Harp was afraid. . . . "I can't get anyone to tell me anything," he said. "What have you heard?"

"Good news and bad. Nine of you, supposed to be eight. You were an afterthought. The good news is just a rumor. Clave's your leader."

"Clave?"

"Himself. Maybe. Now, it could still be true that the Chairman's getting rid of anyone he doesn't like. He—"

"Clave's the top hunter in the tuft! He's the Chairman's son-in-law!"

"But he's not living with Mayrin. Aside from that . . . I'd be guessing."

"What?"

"It's too complicated. I could even be wrong." And Harp drifted off.

The Smoke Ring was a line of white emerging from the pale blue sky, narrowing as it curved around in the west. Far down the arc, Gold was a clot of streaming, embattled storms. His gaze followed the arm around and down and in, until it faded out near Voy. Voy was directly below, a blazing pinpoint like a diamond set in a ring.

It was all sharper and clearer than it had been when Gavving was a child. Voy had been dimmer then, and blurred.

At the passing of Gold, Gavving had been ten years old. He remembered hating the Scientist for his predictions of disaster, for the fear those predictions

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

raised. The shrieking winds had been terrible enough . . . but Gold had passed, and the storms had diminished. . . .

The allergy attack had come days later.

This present drought had taken years to reach its peak, but Gavving had felt the disaster at once. Blinding agony like knives in his eyes, runny nose, tightness in his chest. Thin, dry air, the Scientist said. Some could tolerate it, some could not. Gold had dropped the tree's orbit, he was told; the tree had moved closer to Voy, too far below the Smoke Ring median. Gavving was told to sleep above the treemouth, where the rivulets ran. That was before the rivulets had dwindled so drastically.

The wind too had become stronger.

It always blew directly into the treemouth. Quinn Tuft spread wide green sails into the wind, to catch anything that the wind might bear. Water, dust or mud, insects or larger creatures, all were filtered by the finely divided foliage or entangled in the branchlets. The spine branches migrated slowly forward, west along the branch, until gradually all was swallowed into the great conical pit. Even old huts migrated into the treemouth to be crushed and swallowed.

Everything came to the treemouth. The streams that ran down the trunk found an artificial catchbasin above, but the water reached the treemouth as cookwater, or washwater, or when citizens came to rid themselves of body wastes, to "feed the tree."

Martal's cushion of spine branches had already carried her several meters downslope. Her entourage had retreated to the rim, to join Alfin, the treemouth custodian.

Children were taught how to care for the tree. When Gavving was younger his tasks included carrying collected earth and manure and garbage to pack into the treemouth; removing rocks to use elsewhere; finding the killing pests. He hadn't liked it much—Alfin was a terror to work under—but some of the pests had been edible, he remembered. Earthlife crops were grown here too, tobacco and maize and tomatoes; they had to be harvested before the tree swallowed them.

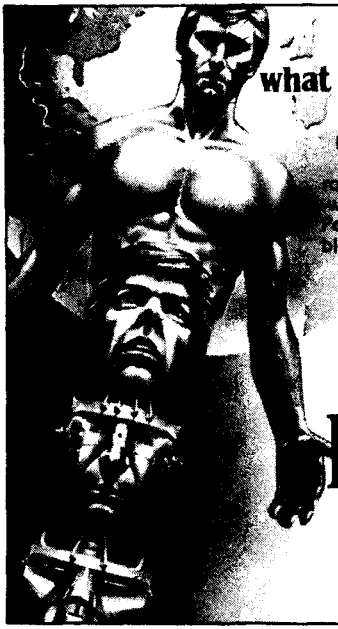
But in these dark days, passing prey were all too rare. Even the insects were dying out. There wasn't food for the tribe, let alone garbage to feed the insects and the tree. The crops were nearly dead. The branch was nude for half its length; it wasn't growing new foliage.

Alfin had had care of the treemouth for longer than Gavving had been alive. That sour old man hated half the tribe for one reason or another. Gavving had feared him once. He attended all funerals . . . but today he truly looked bereaved, as if he were barely holding his grief in check.

Day was dimming. The bright spot, the Sun, was dropping, blurring. Soon enough it would brighten and coalesce in the east. Meanwhile . . . yes, here came the Chairman, carefully robed and hooded against the light, attended by the Scientist and the Grad. The Grad, a blond boy four years older than Gavving, looked unwontedly serious. Gavving wondered if it was for Martal or for himself.

The Scientist wore the ancient falling jumper that signified his rank: a two-piece garment in pale blue, ill-fitting,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



SF's grandmaster imagines what a consumer's paradise could be. Sheer hell.

Everyone is rich. Energy is limitless. Humans have to struggle to use up their quota of credits. Even robots are programmed to be consumers. So what's wrong? Plenty, as the multi-award winning Frederik Pohl prophesies an earth threatened by inexhaustible feast rather than famine. Pohl's inimitible touch makes *Midas World* "witty and penetrating; an engaging look into folly, both human and alien." —*Kirkus Reviews*

"As this provocative work makes plain, Pohl remains one of SF's all-time masters of satiric extrapolation."—*Publishers Weekly*

A NOVEL

Midas World

Frederik Pohl

Available wherever books are sold

ST. MARTIN'S PRESS

with pictures on one shoulder. The pants came to just below the knees; the tunic left a quarter-meter of gray-furred belly. After untold generations the strange, glossy cloth was beginning to show signs of wear, and the Scientist wore it only for official functions.

The Grad was right, Gavving thought suddenly: the old uniform would fit Harp perfectly.

The Scientist spoke praising Martal's last contribution to the health of the tree, reminding those present that one day they must all fulfill that obligation. He kept it short, then stepped aside from the Chairman.

The Chairman spoke. Of Martal's bad temper he said nothing; of her skill with the cookpot he said a good deal. He spoke of another loss, of the son who was lost to Quinn Tuft wherever he might be. He spoke long, and Gavving's mind wandered.

Four young boys were all studious attention; but their toes were nipping at a copter patch. The ripe plants responded by launching their seed pods, tiny blades whirring at each end. The boys stood solemnly in a buzzing cloud of copters.

Treemouth humor. Others were having trouble suppressing laughter; but somehow Gavving couldn't laugh. He'd had four brothers and a sister, and all had died before the age of six, like too many children in Quinn Tuft. In this time of famine they died more easily yet. . . . He was the last of his family. Everything he saw today squeezed memories out of him, as if he were seeing it all for the last time.

It's only a hunting party! His jumpy

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

belly knew better. Hero of a single failed hunt, how would Gavving be chosen for a last-ditch foraging expedition?

Vengeance for Laython. Were the others being punished too? *Who* were the others? How would they be equipped? When would this endless funeral be over?

The Chairman spoke of the drought, and the need for sacrifice; and now his eye did fall on selected individuals, Gavving among them.

When the long speech ended, Martal was another two meters downslope. The Chairman departed hurriedly ahead of the brightening day.

Gavving made for the Commons with all haste.

Equipment was piled on the web of dry spine branches that Quinn Tribe called *the ground*. Harpoons, coils of line, spikes, grapnels, nets, brown sacks of coarse cloth, half a dozen jet pods, claw sandals . . . a reassuring stack of what it would take to keep them alive. Except . . . food? He saw no food.

Others had arrived before him. Even at a glance they seemed an odd selection. He saw a familiar face and called, "Grad! Are you coming, too?"

The Grad loped to join them. "Right. I had a hand in planning it," he confided. A bouncy, happy type in a traditionally studious profession, the Grad had come armed with his own line and harpoon. He seemed eager, full of nervous energy. He looked about him and said, "Oh, treefodder."

"Now what is that supposed to mean?"

"Nothing." He toed a pile of blankets and added, "At least we won't go naked."

"Hungry, though."

"Maybe there's something to eat on the trunk. There'd better be."

The Grad had long been Gavving's friend, but he wasn't much of a hunter. And Merril? Merril would have been a big woman if her tiny, twisted legs had matched her torso. Her long fingers were calloused, her arms were long and strong; and why not? She used them for everything, even walking. She clung to the wicker wall of the Commons, impassive, waiting.

One-legged Jiovan stood beside her, with a hand in the branchlets to hold him balanced. Gavving could remember Jiovan as an agile, reckless hunter. Then something had attacked him, something he would never describe. Jiovan had barely returned alive, with ribs broken and his left leg torn away, the stump tourniquetted with his line. Four years later the old wounds still hurt him constantly, and he never let anyone forget it.

Glory was a big-boned, homely woman, middle-aged, with no children. Her clumsiness had given her an unwanted fame. She blamed Harp the teller for that, and not without justice. There was the tale of the turkey cage; and he told another regarding the pink scar that ran down her right leg, gained when she was still involved in cooking duties.

The hate in Alfin's eyes recalled the time she'd clouted him across the ear with a branchwood beam; but it spoke more of Alfin's tendency to hold grudges. Gardener, garbage man, funeral director . . . he was no hunter, let alone an

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

explorer, but he was here. No wonder he'd looked bereaved.

Glory waited cross-legged, eyes downcast. Alfin watched her with smoldering hate. Merril seemed impassive, relaxed, but Jiovan was muttering steadily under his breath.

These, his companions? Gavving's belly clenched agonizingly on the musrum.

Then Clave entered the Commons, briskly, with a young woman on each arm. He looked about him as if liking what he saw.

It was true. Clave was coming.

They watched him prodding the piled equipment with his feet, nodding, nodding. "Good," he said briskly, and looked about him at his waiting companions. "We're going to have to carry all this treefodder. Start dividing it up. You'll probably want it on your back, moored with your line, but take your choice. Lose your pack and I'll send you home."

The musrum loosed its grip on Gavving's belly. Clave was the ideal hunter: built long and narrow, two and a half meters of bone and muscle. He could pick a man up by wrapping the fingers of one hand around the man's head, and his long toes could throw a rock as well as Gavving's hands. His companions were Jayan and Jinny, twins, the dark and pretty daughters of Martal and a long-dead hunter. Without orders, they began loading equipment into the sacks. Others moved forward to help.

Alfin spoke. "I take it you're our leader?"

"Right."

"Just what are we supposed to be doing with all this?"

"We go up along the trunk. We renew the Quinn markings as we go. We keep going until we find whatever it takes to save the tribe. It could be food—"

"On the bare trunk?"

Clave looked him over. "We've spent all our lives along two klomters of branch. The Scientist tells me that the trunk is a *hundred* klomters long. Maybe more. We don't know what's up there. Whatever we need, it isn't here."

"You know why we're going. We're being thrown out," Alfin said. "Nine fewer mouths to feed, and *look* at who—"

Clave rode him down. He could outshout thunder when he wanted to. "Would you like to stay, Alfin?" He waited, but Alfin didn't answer. "Stay, then. *You* explain why you didn't come."

"I'm coming." Alfin's voice was almost inaudible. Clave had made no threats, and didn't have to. They had been assigned. Anyone who stayed would be subject to charges of mutiny.

And that didn't matter either. If Clave was going, then . . . Alfin was wrong, and Gavving's stomach had been wrong too. They would find what the tribe needed, and they would return. Gavving set to assembling his pack.

Clave said, "We've got six pairs of claw sandals. Jayan, Jinny, Grad . . . Gavving. I'll take the extras. We'll find out who else needs them. Everyone take four mooring spikes. Take a few rocks. I mean it. You need at least one to hammer spikes into wood, and you may want some for throwing. Has everybody got his dagger?"

It was night when they pulled them-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

selves out of the foliage, and they still emerged blinking. The trunk seemed infinitely tall. The far tuft was almost invisible, blurred and blued almost to the color of the sky.

Clave called, "Take a few minutes to eat. Then stuff your packs with foliage. We won't see foliage again for a long time."

Gavving tore off a spine branch laden with green cotton candy. He stuck it between his back and the pack, and started up the trunk. Clave was already ahead of him.

The bark of the trunk was different from the travelling bark of the branch. There were no spine branches, but the bark must have been meters thick, with cracks big enough to partly shield a climber. Smaller cracks made easy grip for fingers.

Gavving wasn't used to claw sandals. He had to kick a little to seat them right, or they slipped. His pack tended to pull him over backward. Maybe he wanted it lower? The tide helped. It pulled him not just downward, but against the trunk too, as if the trunk sloped.

The Grad was moving well, but puffing. Maybe he spent too much time studying. But Gavving noted that his pack was larger than the others. Was he carrying something besides provisions?

Merril had no pack, just her line. She managed to keep up using her arms alone. Jiovan, with two arms and a leg, was overtaking Clave himself, though his jaw was clenched in pain.

Jayan and Jinny, above Gavving on the thick bark, stopped as by mutual accord. They looked down; they looked at each other; they seemed about to weep. A sudden, futile surge of homesickness blocked Gavving's own throat. He lusted to be back in the bachelors' hut, clinging to his bunk, face buried in the foliage wall. . . .

The twins resumed their climb. Gavving followed.

They were moving well, Clave thought. He was still worried about Merril. She'd slow them down, but at least she was trying. She'd find it easier, moving with just two arms, when they got near the middle of the trunk. There would be no tide at all there; things would drift without falling, if the Scientist's smoke dreams were to be believed.

Alfin alone was still down there in the last fringes of tuft. Clave had expected trouble from Alfin, but not this. Alfin was the oldest of his team, pushing forty, but he was muscular, healthy.

Appeal to his pride? He called down, "Do you need claw sandals, Alfin?"

Alfin may have considered any number of retorts. What he called back was, "Maybe."

"I'll wait. Jiovan, take the lead."

Clave worked his pack open while Alfin moved up to join him. Alfin was climbing with his eyes half shut. Something odd there, something wrong.

"I was hoping you could at least keep up with Merril," Clave said, handing Alfin the sandals.

Alfin said nothing while he strapped one on. Then, "What's the difference? We're all dead anyway. But it won't do that copsik any good! He's only got rid of the lames—"

"Who?"

"The Chairman, our precious Chairman! When people are starving, they'll

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

kick out whoever's in charge. He's kicked out the lames, the ones who couldn't hurt him anyway. Let him see what he can snag when they kick him into the sky."

"If you think I'm a lame, see if you can outclimb me," Clave said lightly.

"Everyone knows why *you're* here, you and your women too."

"Oh, I suppose they do," Clave said. "But if you think *you'd* like living with Mayrin, you can try it when we get back. I couldn't. And she didn't like that, and her father didn't like it either. But you know, she was really built to make babies, when I was just old enough to notice that."

Alfin snorted.

"I meant what I said," Clave told him. "If there's anything left that can save the tribe, it's somewhere over our heads. And if we find it, I think I could be Chairman myself. What do you think?"

Startled, Alfin peered into Clave's face. "Maybe. Power hungry, are you?"

"I haven't quite decided. Let's say I'm just mad enough to go for Gold. This whole crazy . . . well, Jayan and Jinny, they can take care of themselves, and if they can't I can. But I had to take Merril before the Chairman would give me jet pods, and then at the last minute he wished Gavving on me, and that was the last straw."

"Gavving wasn't much worse than the other kids I've had to train. Constantly asking questions, I don't know any *two* people with that boy's curiosity—"

"Not the point. He's just starting to show beard. He never did anything *wrong* except *be* there when that damn fool Laython got swallowed. . . . Skip it. Alfin, some of our party is dangerous to the rest."

"You know it."

"How would you handle that?"

It was rare to see Alfin smiling. He took his time answering. "Merril will kill herself sooner or later. But Glory will kill someone else. Slip at the wrong time. Easy enough to do something about it. Wait till we're higher, till the tide is weaker. Knock against her when she's off balance. Send her home the fast way."

"Well, that's what I was thinking too. You are a *danger* to us, Alfin. You hold grudges. We've got problems enough without watching our backs because of you. If you slow me down, if you give *any* of us trouble, I'll send you home the fast way, Alfin. I've got enough trouble here."

Alfin paled, but he answered. "You do. Get rid of Glory before she knocks someone off the trunk. Ask Jiovan."

"I don't take your orders," Clave said. "One more thing. You spend too much energy being angry. Save it. You're likely to need your anger. Now lead off." And when Alfin resumed climbing, Clave followed.

CHAPTER 3: THE TRUNK

Day brightened and faded and brightened again while they climbed. The men doffed their tunics and tucked them into their pack straps; somewhat later, so did the women. Clave leered at Jayan and Jinny impartially. Gavving didn't leer, but in fact the sight distracted him from his climbing.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Jayan and Jinny were twenty-year-old twins, identical, with pale skin and dark hair and lovely heart-shaped faces and nicely conical breasts. Some citizens called them stupid, for they had no fund of conversation; but Gavving wondered. In other matters they showed good sense. As now: Jinny was climbing with Clave, but Merril had dropped far behind, and Jayan stayed just beneath her, pacing her.

Jiovan had lost ground after Clave resumed the lead. He cursed as he climbed, steadily, monotonously: the wind, the bark handholds, his missing leg. Alfin should have been one of the leaders, Gavving thought; but he kept pausing to look down.

Gavving's own shoulders and legs burned with fatigue. Worse, he was making mistakes, setting his claw sandals wrong so that they slipped too often.

Tired people make mistakes. Gavving saw Glory slip, thrash, and fall two or three meters before she caught an edge of bark. While she hugged herself ferociously against the tree, Gavving moved crosswise until he was behind and to the side of her.

Fear held her rigid.

"Keep going," Gavving said. "I'll stay behind you. I'll catch you."

She looked down; nodded jerkily; began climbing again. She seemed to move in convulsions, putting too much effort into it. Gavving kept pace.

She slipped. Gavving gripped the bark. When she dropped into range he planted the palm of his hand under her buttocks and pushed her hard against the tree. She gasped, and clung, and resumed climbing.

Clave called down. "Is anybody thirsty?"

They needed their breath, and the answer was too obvious. Of *course* they were thirsty. Clave said, "Swing around east. We'll get a drink."

Falling water had carved a channel along the eastern side of the trunk. The channel was fifty meters across and nearly dry over most of its water-smoothed surface. But the tree still passed through the occasional cloud; mist still clung to the bark; wind and Coriolis force set it streaming around to the east as it fell; and water ran in a few pitiful streams toward Quinn Tuft below.

"Watch yourselves," Clave told them. "Use your spikes if you have to. This is slippery stuff."

"Here," the Grad called from over their heads.

They worked their way toward him. A hill of rock must have smacked into the tree, long ago, half-embedding itself. The trunk had grown to enclose it. It made a fine platform, particularly since a stream had split to run round it on both sides. By the time Merril and Jayan had worked their way up, Clave had hammered spikes into the wood above the rock and attached lines.

Merril and Jayan worked their way onto the rock. Merril lay gasping while Jayan brought her water.

Glory lay flat on the rock with her eyes closed. Presently she crawled to the portside stream. She called to Clave. "Any limit?"

"What?"

"On how much we drink. The water goes—"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Clave laughed loudly. Like the Chairman hosting a midyear celebration, he bellowed, "Drink! Bathe! Have water fights! Who's to stop us? If Quinn Tribe didn't want their water second-hand, we wouldn't be here." He worked their single cookpot from his pack and threw streams of water at selected targets: Merril, who whooped in delight, Jiovan, who sputtered in surprise, Jayan and Jinny, who advanced toward him with menace in their eyes. "I dare not struggle on this precarious perch," he cried, and went limp. They rolled him in the stream, hanging onto his hands and feet so that he wouldn't go over.

They climbed in a spiral path. They weren't here just to climb, Clave said, but to explore. Gavving could hear Jiovan's monotonous cursing as they climbed into the wind, until the wind drowned him out.

Gavving reached up for a fistful of green cotton and stuffed it in his mouth. The branch that waved above his pack was nearly bare now. The sky was empty out to some distant streamers of cloud, and a dozen dots that might be ponds, all hundreds of klomters out. They'd be hurting for food when sleeptime came.

He was crossing a scar in the bark, a puckering that ran down into the wood itself. An old wound that the bark was trying to heal . . . big enough to climb in, but it ran the wrong way. Abruptly the Grad shouted, "Stop! Hold it up!"

"What's the matter?" Clave demanded.

"The Quinn Tribe markings!"

Without the Grad to point it out, Gavving would never have realized that this was writing. He had seen writing only rarely, and these letters were three to four meters across. They couldn't be read; they had to be inferred: **DQ,** with a curlique mark across the **D.**

"We'll have to gouge this out," the Grad said. "It's nearly grown out. Someone should come here more often."

Clave ran a critical eye over his crew. "Gavving, Alfin, Jinny, start digging. Grad, you supervise. Just dig out the **Q,** leave the **D** alone. The rest of you, rest."

Merril said, "I can work. For that matter, I could carry more."

"Tell me that tomorrow," Clave told her. He made his way across the bark to clap her on the shoulder. "If you can take some of the load, you'll get it. Let's see how you do tomorrow with your muscles all cramped up."

They carved away bark and dug deeper into the wood with the points of their harpoons. The Grad moved among them. The **Q** took shape. When the Grad approached him, Gavving asked, "Why are the letters so big? You can hardly read them."

"They're not for us. You could see them if you were a klomter away," the Grad said.

Alfin had overheard. "Where? Falling? Are we doing this for swordbirds and triunes to read?"

The Grad smiled and passed on without answering. Alfin scowled at his back, then crossed to Gavving's position. "Is he crazy?"

"Maybe. But if you can't dig as deep as Jinny, the mark will look silly to the swordbirds."

"He tells half a secret and leaves you

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

hanging," Alfin complained. "He does it all the time."

They left the tribal insignia carved deep and clear into the tree. The wind was beating straight down on them now. Gavving felt a familiar pain in his ears. He worked his jaw while he sought the old memory, and when his ears popped it came: pressure/pain in his ears, a score of days after the passing of Gold, the night before his first allergy attack.

These days he rarely wondered if he would wake with his eyes and sinuses streaming in agony. He simply lived through it. But he'd never wakened on the vertical slope of the tree! He pictured himself climbing blind. . . .

That was what distracted him while a thick, wood-colored rope lifted from the bark to wrap itself around Glory's waist.

Glory yelped. Gavving saw her clinging to the bark with her face against it, refusing to look. The rope was pulling her sideways, away from him.

Gavving pulled his harpoon from his pack before he moved. He crawled around Glory toward the living rope.

Glory screamed again as her grip was torn loose. Now only the live rope itself held her from falling. He didn't dare slash it. Instead he scampered toward its source, while the rope coiled itself around Glory, spinning her, reeling her in.

There was a hole in the tree. From the blackness inside Gavving saw a thickening of the live rope, and a single eye lifting on a stalk to look at him. He jabbed at it. A lid flicked closed; the stalk dodged. Gavving tracked it. He felt the jar through his arm and shoulder as the harpoon punched through.

A huge mouth opened and screamed. The living rope thrashed and tried to fling Glory away. What saved Glory was Glory herself; she had plunged her own harpoon through the brown hawser and gripped the point where it emerged. She clung to the haft with both hands while the rope bent around to attack Gavving.

The mouth was lined with rows of triangular teeth. Gavving pulled his harpoon loose from the eye, with a twist, as if he had practiced all his life. He jabbed at the mouth, trying to reach the throat. The mouth snapped shut and he struck only teeth. He jabbed at the eye again.

Something convulsed in the dark of the hole. The mouth gaped improbably wide. Then a black mass surged from the hole. Gavving flung himself aside in time to escape being smashed loose. A hut-sized beast leapt into the sky on three short, thick legs armed with crescent claws. Short wings spread, a claw swiped at him and missed. Gavving saw with amazement that the rope was its nose.

He had thought it was trying to escape. Ten meters from its den it turned with improbable speed. Gavving shrank back against the bark with his harpoon poised.

The beast's wings flapped madly, in reverse, pulling it back against its stretching nose . . . futilely. The foray team had arrived in force. Lines wrapped Glory and trapped the creature's rope of a nose. Lines spun out to bind its wings. Clave was screaming orders. He and Jinny and the Grad pulled strongly, turning the beast claws-outward from

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the tree. In that position it was reeled in until harpoons could reach its head.

Gavving picked a spot and jabbed again and again, drilling through bone, then red-gray brain. He never noticed when the thing stopped moving. He only came to himself when Clave shouted, "Gavving, Glory, dinner's on you. You killed it, you clean it."

You killed it, you clean it was an easy honor to dodge. You only had to admit that your prey had hurt you. . . .

Jayan and Jinny worked at building a fire in the creature's lair. They worked swiftly, competently, almost without words, as if they could read each other's minds. The others were outside, chopping bark for fuel. Gavving and Glory moored the corpse with lines and spikes, just outside the hole, and went to work.

The Grad insisted on helping. Strictly speaking, he didn't have the right, but he seemed eager, and Glory was tired. They worked slowly, examining the peculiar thing they had killed.

It had a touch of trilateral symmetry, like many creatures of the Smoke Ring, the Grad said. A smaller third wing was placed far back: a steering fin. The forward pair were motive power and (as the Grad gleefully pointed out) ears. Holes below each wing showed as organs of hearing when the Grad cut into them. The wings could be cupped to gather sound.

It was a digger. Those little wings would barely move it. Everything in the Smoke Ring could fly in some sense; but this one would prefer to dig a hole and ambush its prey. Even its trunk wasn't all that powerful. The Grad searched until he found the sting that had been in its tip. The size of an index finger, it was embedded in Glory's pack. Glory nearly fainted.

They kept the claws. Clave would use them to tip his grapnels. They cut steaks to be broiled and passed to the rest, who by now were moored on spikes outside. They set bigger slabs of meat to smoke at the back of the wooden cave.

Gavving realized that his eyes were blurry with exhaustion. Glory was streaming sweat. He put his arm over her shoulders and announced, "We quit."

"Good enough," Clave called in. "Take our perches. Alfin, let's carve up the rest."

Clave's team was well fed; overfed. They drifted on lines outside the cave. Meat smoked inside. The carcass, mostly bones now, had been set to block the entrance.

Clave said, "Citizens, give me a status report. How are we doing? Is anyone hurt?"

"I hurt all over," Jiovan said, and scowled at the chorus of agreement.

"All over is good. Glory, did that thing break any of your ribs?"

"I don't think so. Bruises."

"Uh huh." Clave sounded surprised. "Nobody's fallen off. Nobody's hurt. Have we lost any equipment?"

There was a silence. Gavving spoke into it. "Clave, what are you doing here?"

"We're exploring the trunk, and renewing the Quinn markings, and stopping a famine maybe. Today's catch is a good first step."

Gavving was prepared to drop it, but Alfin wasn't. "The boy means, what

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

are *you* doing here? You, the mighty hunter, why did you go out to die with the lames?''

There was a muttering, perhaps, but no overt reaction to the word *lames*. Clave smiled at Alfin. ''Turn it around, Quinn Tribe's custodian of the tree-mouth. Why was the tribe able to spare *you?*''

The west wind had softened as they climbed, but it was still formidable; it blew streamers of smoke past the carcass. Alfin forced words from himself. ''The Chairman thought it was a good joke. And nobody . . . nobody wanted to speak up for me.''

''Nobody loves you.''

Alfin nodded, and sighed as if a burden had been lifted from him. ''Nobody loves me. Your turn.''

Gavving grinned. Clave was stuck, and he knew it. He said, ''Mayrin doesn't love me. I traded her in for two prettier, more loving women. Mayrin is the Chairman's daughter.''

''That's not all of it and you know it.''

''If you know better than I do, then keep talking,'' Clave said reasonably.

''The Grad can back me up. He knows some tribal history. When things go wrong, when citizens get unhappy, the leader's in trouble. The Scientist himself almost got drafted! The Chairman is scared, that's what. The citizens are hungry, and there's an obvious replacement for the Chairman. Clave, he's scared of *you*.''

''Grad?''

''The Scientist knows what he's doing.''

''He blamed it all on you!'' Alfin cried. ''I was there!''

''I know. He had his reasons.'' The Grad noticed the silence, and laughed. ''No, I didn't cause the drought! We rounded Gold, and Gold swung us too far in toward Voy, down to where the Smoke Ring thins out. It's a gravity effect—''

''Many thanks for explaining it all,'' Clave said with cheerful sarcasm. Gavving was irritated and a bit relieved: nobody else understood the Grad's gibberish either. ''Is there anything else we should settle?''

Into the silence Gavving said, ''How do we cause a flood?''

There was some laughter. Clave said, ''Grad?''

''Forget it.''

''It'd solve everybody's problems. Even the Chairman's.''

''This is silly . . . well. Floods come when a pond brushes the tree, somewhere on the trunk. A lot of water clings to the trunk. The tide pulls it down. Usually we get some warning from a hunting party, and we all scurry out along the branch. The big flood, ten years ago . . . most of us got to safety, but the waterfall tore away some of the huts, and most of the earthlife crops, and the turkey pens. It was a year before we caught any more turkeys.

''And I wish we'd have another flood,'' the Grad said. ''Sure I do. The Scientist thinks the whole *tree* . . . never mind. You can't catch a pond. We're too far into the gas torus region—''

''There,'' Gavving said, and pointed east and out, toward a metal-colored dot backed by rosy streamers of cloud. ''I think it's bigger than it was.''

''What of it? It'll come or it won't. If it did come floating past, what would

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

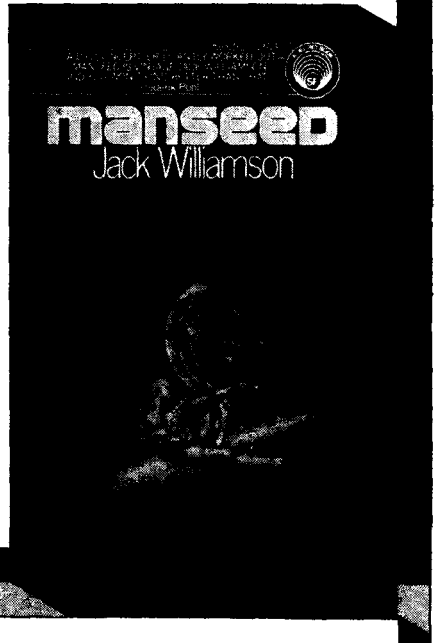
Finally in paperback!

"MANSEED is vintage Jack Williamson, and you won't find much better than that!"
—Frederik Pohl

manseed
Jack Williamson

Egan Drake was a wealthy but unhappy visionary who died early and left behind a powerful dream. He proposed to spread mankind among the stars.

The project was grandiose in aim: a thousand tiny ships would crawl to the stars; each would produce colonists derived from the genes of geniuses...



Cover illustration by Rick Sternbach

On sale in October

DEL REY **#1 Publisher of Science Fiction and Fantasy**
Published by Ballantine Books

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

you do, throw lines and grapnels? Forget it. Just forget it."

"Enough," Clave said. "That meat's probably done. Let's get the smoke out and get inside."

Gavving woke in the night and wondered where he was.

He half-remembered the sounds of groans. Someone in pain? It had stopped now. Sound of wind, sound of many people breathing. Warm bodies all around him. Rich smells of smoke and perspiration. Aches everywhere, as if he'd been beaten.

A woman's voice spoke near his ear. "Are you awake too?"

And another, a man's: "Yes. Let me sleep." Alfin?

Silence. And Gavving remembered: The cave was just large enough to accommodate nine exhausted climbers, after they flung the nose-arm's bones into the sky. By now the offal might have reached Quinn Tuft, to feed the tree.

They huddled against each other, flesh to flesh. Gavving had no way to avoid eavesdropping when Alfin spoke again, though his voice was a whisper. "I can't sleep. Everything hurts."

Glory: "Me too."

"Did you hear groaning?"

"Clave and Jayan, I think, and believe me, they're feeling no pain."

"Oh. Good for them. Glory, why are you talking to me?"

"I was hoping we could be friends."

"Just don't *climb* near me, all right?"

"All right."

"I'm afraid you'll knock me off."

"Alfin, aren't you afraid to be so high?"

"No."

"I am."

Pause. "I'm afraid of falling off. I'd be crazy not to be."

There was quiet for a time. Gavving began to notice his own aching muscles and joints. They must be keeping him awake . . . but he was dozing when Alfin spoke again.

"The Chairman knew it."

"Knew what?"

"He knows I'm afraid of falling. That's why the copsik bastard kept sending me under the branch on hunts. Nothing solid under me, trying to hang on and throw a harpoon too . . . I got even, though."

"How?" Glory asked, while Gavving thought, *So did the Chairman.*

"Never mind. Glory, will you lie with me?"

A strained whisper. "No. Alfin, we can't be alone!"

"Did you have a lover, back in the tuft?"

"No."

"Most of us didn't. Nobody to protect us when the Chairman thought this up."

A pause, as for thought. "I still can't. Not here."

Alfin's voice rose to a shout. "Clave! Clave, you should have brought a masseuse!"

Clave answered from the darkness. "*I* brought *two*."

"Treefodder," Alfin said without heat; perhaps with amusement. Presently there was quiet.

* * *

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

CHAPTER 4: FLASHERS AND FAN FUNGUS

In the morning they hurt. Some showed it more than others. Alfin tried to move, grunted in pain, curled up with his face buried in his arms. Merril's face was blank and stoic as she flexed her arms, then rose onto her hands. Jayan and Jinny commiserated with each other, massaging each other's pains away. On Jiovan's face, amazement and agony as he tried to move; then a look of betrayal thrown in Clave's direction.

From Glory: wild-eyed panic. Gavving tapped her shoulderblade and flinched at his own agony-signals. "We all hurt. Can't you tell? You won't be left behind. Nobody's got the strength."

Her eyes turned sane. She whispered, "I *wasn't* thinking that. I was thinking I *hurt*. That's normal, isn't it?"

"Sure. You're not crippled, though."

"Thank you for taking care of me yesterday. I'm really grateful. I'm going to get better at this, I promise."

The Grad spoke without trying to move. "We'll all get better. The higher we get, the less we weigh. Pretty soon we'll be floating."

Clave trod carefully among citizens who were awake but not mobile. Gavving felt a stab of envy/anger. *Clave* didn't hurt. From the back of the nose-arm's burrow he selected a slab of smoked meat ragged with harpoon-wounds. "Take your time over breakfast," he instructed them. "Eat. It's the easier way to carry provisions—"

"And we burned a lot of energy yesterday," the Grad said. He moved like a cripple to join Clave, and began tearing into a meter's length of what had been the nose-arm's rib. It made sense to Gavving, and he joined them. The meat had an odd, rank flavor. You could get used to it, he thought, if your life depended on it.

Clave moved among them, gnawing at his huge slab of meat. He sliced a piece off and made Merril take it. He listened to Jiovan describing his symptoms, then interrupted with, "You've got your wind back. That's good. Now eat," handing him more of the steak. He cut the rest in half for Jayan and Jinny, and spent a minute or two doing massage on their shoulders and hips. They winced and groaned.

Presently, when all had eaten something, Clave looked around at his team. "We'll circle to the east and get water half a day after we start. There's no room in here to do warm-up exercises; we'll just have to start moving. So saddle up, citizens. We'll have to 'feed the tree' in the open, and whether you actually feed the tree is up to the tide and the wind. Alfin, take the lead."

Alfin led them on an upward spiral, counter-clockwise. Gavving found his aches easing as they climbed. He noticed that Alfin never looked down. Not surprising if Alfin didn't give a damn for those following him . . . but he *never* looked down.

Gavving did, and marvelled at their progress. Two extended hands would have covered all of Quinn Tuft.

They delayed to repair the **Q** in a **DQ** mark. The sun had been horizontal in the east when they started. It was approaching Voy before they reached water-smoothed wood.

A rivulet flowed down a meandering

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

groove. This time there was no natural perch. Nine thirsty citizens pounded spikes into the wood and hung by their lines to drink, wash, soak their tunics and wring them out.

Gavving noticed Clave speaking to Alfin a little way below. He didn't hear what was said. He only saw what Alfin did.

"And suppose I don't?"

"Then you don't." Clave gestured upward, where the rest of them hung. "Look at them. *I* didn't choose them. What do I do if one of my citizens turns out to be a coward? I live with it. But I have to know."

Alfin looked white with rage. *Not* red with fury. There isn't any "white with rage"; white means fear, as Clave had learned long ago. A frightened man can kill . . . but Alfin's hands were clenched on his line, and Clave's harpoon was over his shoulder, easily reached.

"I have to know. I can't put you in the lead if you can't make yourself look down to see how they're doing. See? I'll have to put you where you don't hurt anyone else if you funk it. Tail-end Charley. And if you freeze, I want to be sure nobody—"

"All right." Alfin dug in his pack, produced a spike and a rock. He pounded the spike in beside the one he was hanging from.

"Make sure you can depend on it. It's *your* life."

The second spike was in deeper than the first. Alfin tied the loose end of his line to both spikes, and knotted it again. "And I leave you next to it?"

"You take that chance too. Or you don't. I have to *know*."

* * *

Alfin leapt straight outward, trailing loops of line. He thrashed, then threw his arms over his face.

He fell slowly. *We're all lighter,* Gavving realized. *It's real. I thought I was just feeling better, but we're lifting less—* And Alfin was still falling, but now he'd uncovered his face. His arms windmilled to turn him on his back. Gavving noticed Clave's hand covering the spikes that moored Alfin's line. The line pulled taut and swung Alfin in against the tree.

Gavving watched him climb up. And watched him jump again, limbs splayed out as if he were trying to fly. It seemed he might make it, he fell so slowly; but presently the tide was pulling him down against the tree again.

"That actually looks like fun," Jayan said.

Jinny said, "Ask first."

Alfin didn't jump again. When he had climbed back up to Clave's position, and both had climbed to rejoin the team, Jinny spoke. "Can we try that?"

Alfin sent her a look like a harpoon. Clave said, "No, time to get moving. Saddle up—"

Alfin was in the lead again when they set out. He made a point of pausing frequently to look back. And Gavving wondered.

Yesterday Alfin had swarmed all over the nose-arm, hacking like a berserker maniac, like Gavving himself. It was hard to believe that Alfin was afraid of Clave, or of heights, or of anything.

The sun circled the sky, behind Voy and back to zenith, before they came to lee again. The water-smoothed wood

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

was soft here, soft enough that they could cross with a spike in each hand, jab and yank and jab. They veered down to avoid scores of birds clustered on the wood. Scarlet-tailed, the birds were otherwise the grayish-brown of the wood itself.

When they reached the rivulet it was smaller yet, but it was enough: they hung in the water and let it cool them and run into their faces and mouths. Clave shared out smoked meat. Gavving found himself ravenous.

The Grad watched the birds as he ate. Presently he burst out laughing. "Look, they've got a mating dance going."

"So?"

"You'll see."

Presently Gavving did see; and so did others, judging by Clave's bellowing laugh and the giggles from Jayan and Jinny. A gray-brown male would approach a female and abruptly spread his gray wings like a cloak. Under the gray was brilliant yellow, and a tube protruding from a splash of crimson feathers.

"The Scientist told me about them once. Flashers," said the Grad. His smile died as he said, "I wonder what they eat?"

"What difference does it make?" Alfin demanded.

"Maybe none." The Grad made his way upward toward the birds. The birds flew off, then returned to dive at him, shrieking obscenities. The Grad ignored them. Presently he returned.

Alfin asked, "Well?"

"The wood's riddled with holes. Riddled. The holes are full of insects. The birds dig in and eat the insects."

"You're in love," Alfin challenged. "You're in love with the idea that the tree's dying."

"I'd love to believe it isn't," the Grad said, but Alfin only snorted.

They spiralled around to the western side while the sun dropped beneath Voy and began to rise again. The wind was less ferocious now. But they were getting tired; there was almost no chatter. They rested frequently in crevasses in the bark.

They were resting when Merril called, "Jinny? I'm hung up."

A pincer the size of Clave's fist gripped the fabric of Merril's nearly empty pack. Merril pulled back against it. From a hole in the bark there emerged a creature covered in hard brown segmented plates. Its face was a single plate with a deeply inset eye. The body looked soft behind the last plate.

Jayan slashed where its body met the bark. The creature separated. It still clung to Merril's pack with idiot determination. Jayan levered the claw open with her harpoon and dropped the creature into her own pack.

When they had circled round to water again, Clave set water to boiling in the small lidded pot. He made tea, refilled the pot, and boiled Merril's catch. It made one bite each for his team.

They wedged themselves into a wide crack with the shape of a lightning-stroke, and moored themselves with lines. Together but separate, head to foot within the bark, they had no chance to converse, and no urge. Four days of climbing since breakfast left them too tired for anything but sleep.

At waking they ate more of the smoked meat. "Let's look for more of

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

those hard-shelled things," Clave suggested. "That was good." He didn't have to urge them to get moving. He never would, Gavving realized, as long as they couldn't sleep where water flowed.

This time Jiovan was given the lead. He took them on a counter-clockwise spiral that brought them back to lee within half a day. Again the wood was soft and riddled with holes, and flashers swarmed below them. Alfin and Glory tended to lose ground in the leeward regions. Jiovan remarked on it and earned a look of dull hatred from Alfin.

The thing was that Alfin took more care setting his spikes than the rest did. And Glory didn't, so she lost time slipping and catching herself—

They moored themselves in the stream and drank and washed.

Alfin spotted something far above them: Gray nubs reaching out from the bark on both sides of the rivulet. He climbed, doggedly pounding spikes into the wood, and came back with a fan-shaped fungus, pale gray with a red frill, half the size of his pack. "It could be edible," he said.

Clave asked, "Are you willing to try it?"

"No." He started to throw it away.

Merril stopped him. "We're here to keep the tribe from starving," she said. She broke a red-and-gray chunk from the fringe and ate a meager mouthful. "Not much taste, but it's nice. The Scientist would like it. You could chew it with no teeth." She took another bite.

Alfin broke off a piece of the grayish-white inside and ate that, looking as if he were taking poison. He nodded. "Tastes okay."

At which point there were more volunteers, but Clave vetoed that. When they departed, Clave veered upward to pick a bouquet of the fan-shaped fungi. A meter-square fan rode like a flag above his pack.

The sun was rising up the east.

It was below Voy—you could look straight down along the trunk, past the green fuzz-ball that was Quinn Tuft, and see Voy's bright spark at the fringe of the soft sun-glow—and the west wind was blowing almost softly across the ridges of the bark, when Gavving heard Merril shout, "Who needs legs?"

She was holding herself an arm's length from the bark by a one-handed grip. He shouted down. "Merril? Are you all right?"

"I feel *wonderful!*" She let go, and began to fall, and reached out and caught herself. "The Grad was right! We can *fly!*"

Gavving crawled toward her. Jinny was already below her, pounding in a spike. When Gavving reached them Jayan was using the spike for support, with her line ready in her other hand. They pulled Merril back against the tree.

She didn't resist. She crowed, "Gavving, why do we live in the tuft? There's food here, and water, and who needs legs? Let's stay. We don't need any nose-arm cave, we can dig out our own. We've got nose-arm meat and those shelled things and the fan fungus. I've eaten enough foliage to last me the rest of my life! But if anyone wants it, we'll send down someone with legs."

We'll have to be careful of that fan fungus, Gavving thought. He was pounding spikes into bark; on the other

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

side of Merril, Jiovan was doing the same. Where was Clave?

Clave was with Alfin, high above them, in furious inaudible argument.

"Come on, let's get going! What are you doing?" Merril demanded, while Gavving and Jiovan bound her to the bark. "Or, listen, I've got a wonderful idea. Let's go back. We've got what we want. We'll kill another nose-arm and we, we'll grow fan fungus in the tuft. Then set up another tribe here. Claaave!" she bellowed as Clave and Alfin climbed down into earshot. "How would I do as Chairman of a colony?"

"You'd be terrific. Citizens, we'll be here for awhile. Moor yourself. Don't do any flying."

"I never thought it could be this good," Merril told them. "My parents, when I was little they were just waiting for me to die. But they wouldn't feed me to the treemouth. I thought about it too, but I never did. I'm glad. Sometimes I thought of me as an example, something people need to be happy. Happy they have legs. Even one leg," she whispered hoarsely to Jiovan. "Legs! So what?"

Jiovan asked Clave, "How long do we have to put up with this?"

"You don't. Take, ah, take the Grad and find us a better place to sleep."

Jiovan looked about him. "Like what?"

"A cave, a crack or a bulge in the bark . . . anything that's better than hanging ourselves here like smoking meat."

"I'll go too," Alfin said.

"You stay."

"Clave, you do not have to treat me like a baby! I only ate from the middle of the thing. I feel fine!"

"So does Merril."

"What?"

"Never mind. You feel grouchy, and *that's* fine. Merril feels fine, and that's—"

"Alfin, I am *so* glad you didn't stop me from coming." Merril smiled radiantly at him. In that moment Gavving thought her beautiful. "Thank you for trying, though. Feel sleepy," Merril said, and went to sleep.

Alfin saw questioning eyes. He spoke reluctantly. "I, I thought I could talk the Chairman out of this idiocy. Sending a, a legless woman up the tree! Clave, I *do* feel fine. Wide awake. Hungry. I'd like to try some more."

Clave removed a fan from his pack. He tore away some of the scarlet fringe, then offered Alfin a hand-sized piece of the white interior. If Alfin flinched it was for too short a time to measure. He ate the whole chunk with a theatrical relish that had Clave grinning. Clave broke off the rest of the red fringe and pouched it separately.

Jiovan and the Grad returned. They had found a **DQ** mark overgrown with fungus like a field of gray hair. "Infected. We'll have to burn it out," the Grad said.

"Suppose it keeps on burning? We don't have any water," said Clave. "Never mind. Let's have a look. Jayan, Jinny, stay with Merril. One of you come get me if she wakes up."

They examined the fungus patch dubiously. Scraping out all that gray hair would be a dull job. Clave pulled up a wad and set fire to it. It burned slowly, sullenly.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Let's try it. But get some of our packs emptied in case we have to beat it out."

The fungus patch burned slowly. The west wind wasn't strong at this height, and the smoke tended to sit within the fungus "hairs," smothering the fire. It kept putting itself out. Yet it crept around in glowing fringes, restarting itself. They had to back away as foul-smelling smoke built up in the vicinity.

The smoke was dissipating. Gavving moved in and found most of the fungus gone, the rest left as black char. The **Q** was two meters deep.

Clave made a torch from a chunk of bark and burned out some remaining patches. "Scrape that out and I think we can all sleep in it. Gavving, Jinny, you go back for Merril."

When they started to move her Merril woke instantly, happy and active and bubbling with plans. They coaxed her across the bark, ready for anything, and presently moored her in the scraped-out bottom of the **Q.**

Then there was nothing for it but to settle into the **Q** for early sleep.

Merril slept like a baby, but others shifted restlessly. Desultory conversations started and stopped. Presently Clave asked, "Jiovan, how are you doing?"

"How do you mean?"

"I mean the whole trip. How are you doing?"

Jiovan snorted. "I'm hungry. I hurt a lot, but I'm used to that. I can climb. Do you mean how are *we* doing? We won't know that till we get home. Merril's out of her head right now, but she could be right too."

Clave was startled. "You mean, live *here?*"

"No, that's crazy. I mean go back now. Kill something and smoke it and collect more fan fungus and go home. We'd be heroes, as much as any hunt party that comes home with meat, and I don't mind telling you, I'm ready. I'm treefeeding sick of being one of the, the lames. I used to be the one who *fed* the tribe . . . and if the fan fungus will grow in the tuft—"

By now the whole troop was listening. Clave knew he was talking for an audience. He said, "Merril could be pretty sick, you know."

"She feels great."

"Oh, let's see how she feels when it wears off. I might want to try it myself," Clave chuckled. He was hoping it would drop there.

No chance, not with Alfin listening. "What about going home? We've got what we came for."

"I don't think so. We sure haven't scraped out all the tribemarks, have we, Grad?"

"They're supposed to run all along the trunk."

"Then let's go at least as far as the middle. We already know we can feed ourselves. Who knows what else we'll find? The nose-arm was good eating, but we've only found one, and we couldn't feed him in the Tuft. We can pick up some fan fungus on the way back. What else? Are the flashers good to eat? Could we transplant those shelled things?"

The Grad was catching fire. "Get them growing just above the Tuft. It might work. Sure I'd like to go on. I

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

want to see what it's like when there isn't any tidal force at all."

"We already know what Merril would say. Anyone else?"

Alfin grunted. Nobody else spoke.

"We go on," Clave said.

CHAPTER 5: MEMORIES

It was there again. There was a special frequency of light that Sharls Davis Kendy had sought for five hundred years. He had found it fifty-two years ago, and forty-eight, and twenty, and . . . six certain sightings and another ten probable. The locus moved about. This time it was west of his position, barely filtering through the soup of dust and gas and dirt and plant life: the light of hydrogen burning with oxygen.

Kendy held his attention on a wavering point within the Smoke Ring. Rarely did the CARM even acknowledge that his signal had penetrated the maelstrom; but he never considered not trying. "Kendy for the State. Kendy for the State."

The CARM's main motor would run for hours now. It would accelerate slowly, too slowly: pushing something massive. What were they doing in there?

Had they entirely forgotten *Discipline* and Sharls Davis Kendy?

Kendy had forgotten much, but what remained to him was as vivid as the moment it had happened. These futile attempts at contact needed little of his attention. Kendy took refuge in memory.

The target star was yellow-white, with a spectrum very like Sol's, circling an unseen companion. At 1.2 solar masses, T3 was minutely brighter and bluer than Sol: about G0 or G1. The companion, at half a solar mass, would be a star, not a planet. It should at least have been visible.

The State had telescopic data from earlier missions to other stars. There was at least a third, planet-sized body in this system. There *might* be a planet resembling the primordial Earth; in which case *Discipline* would fulfill its primary mission by seeding its atmosphere with oxygen-producing algaes. On a distant day the State would return to find a world ripe for colonization.

But someone would have come anyway, to probe the strangeness of this place.

Discipline was a seeder ramship, targeted for a ring of yellow stars that might host worlds like the primordial Earth. Its secondary mission was a secret known only to Kendy; but exploration was a definite third on the list. *Discipline* would not stop here. Kendy would skim past T3, take pictures and records, and vanish into the void. He might slow enough to drop a missile with a warhead of tailored algae, if a target world could be found.

Four of the crew were in the control module. They had the telescope array going, and a water picture of a yellow-white star on the big screen, with a pinpoint of fierce blue-white light at its edge. Sam Goldblatt had a spectrum of T3 displayed on a smaller screen.

Sharon Levoy was lecturing for the record; nobody else was listening. "That solves *that*. Levoy's Star is an old neutron star, half a billion to a billion years

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

beyond its pulsar stage. It's still hotter than hell, but it's only twenty kilometers across. The radiating surface is almost negligible. It must have been losing its spin and its residual heat for all of that time. We didn't see it because it isn't putting out enough light.

"The yellow dwarf star might have planets, but we can expect that their atmospheres were boiled away by the supernova event of which Levoy's Star is the ashes—"

Goldblatt snarled, "We're supposed to be the first expedition here! *Prikazyvat Kendy!*"

The crew were not supposed to be aware that the ship's computer and its recorded personality could eavesdrop on them. Therefore Kendy said, "Hello, Sam. What's up?"

Sam Goldblatt was a large round man with a bushy, carefully tended moustache. He'd been chewing it ever since Levoy found and named the neutron star. Now his frustration had a target. "Kendy, do you have records of a previous expedition?"

"No."

"Well, check me out. Those are absorption lines for oxygen and water, *here,* aren't they? Which means there's green life somewhere in that system, doesn't it? And that means the State sent a seeder here!"

"I noticed the spectrum. After all, Sam, why shouldn't plant life develop somewhere on its own? Earth's did. Besides, those lines can't represent an Earthlike world. They're too sharp. There's too much oxygen, too much water."

"Kendy, if it isn't a planet, what *is* it?"

"We'll learn that when we're closer."

"Hmph. Not at this speed. Kendy, I think we should slow down. Decelerate to the minimum at which the Bussard ramjet will work. We won't waste onboard fuel, we'll get a better look, and we can accelerate again when we've got the solar wind for fuel."

"Dangerous," said Kendy. "I recommend against it." And that should have been that.

For five hundred and twelve years Kendy had been editing clumps of experience from his memory wherever he decided they weren't needed. He didn't remember deciding to follow Goldblatt's suggestions. Goldblatt must have persuaded Captain Quinn and the rest of the crew, and Kendy had given in . . . to them? or to his own curiosity?

Kendy remembered:

Levoy's Star and T3 circled a common point in eccentric orbits, at a distance averaging 2.5×10^8 kilometers, with an orbital period of 2.77 Earth years. The neutron star had been behind the yellow dwarf while *Discipline* backed into the system. Now it emerged into view of *Discipline*'s telescope array.

He saw a ring of white cloud, touched with green, with a bright spark at its center. The spectral absorption lines of water and oxygen were coming from there. It was tiny by astronomical standards: the region of greatest density circled the neutron star at 26,000 kilometers . . . about four times the radius of the Earth.

"Like a Christmas wreath," Claire Dalton breathed. The sociologist's body was that of a pretty, leggy blonde, but her corpsicle memories reached far

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

back . . . and what was she doing on the bridge? Captain Dennis Quinn might have invited her, the way they were standing together. It indicated a laxity in discipline that Kendy would have to watch.

The crew of *Discipline* continued to study the archaic Christmas wreath. Until Sam Goldblatt suddenly crowed, "Goldblatt's World! Prikazyvat Kendy, record that, Goldblatt's World! There's a planet in there."

"I'm not close enough to probe that closely, Sam."

"It has to be there. You know how a gas torus works?"

It was there in Kendy's memory. "Yes. I don't doubt you're right. I can bounce some radar off that storm complex when we pass."

"Pass, hell. We've got to stop and investigate this thing." Goldblatt looked about him for support. "Green means life! Life, and no planet! We've got to know all about it. Claire, Dennis, you see that, don't you?"

The crew included twelve citizens and eight corpsicles. The corpsicles might argue, but they had no civil rights; and the citizens had less than they thought. For reasons of morale, Kendy maintained the fiction that they were in charge.

Goldblatt's suggestion was not worth considering. Kendy said, "Think. We've got fuel to decelerate once and once only. We'll need it when we reach Earth."

"There's water in there," Dennis Quinn said thoughtfully. "We could refuel. I bet the water's rich in deuterium and tritium. Why not, it's circling the ashes of a supernova!"

Claire Dalton was gazing at the screen, at a perfect smoke ring with a tiny hot pinpoint in its center. "The neutron star has cooled off, lost most of its rotation and most of its heat and most of that ferocious magnetic field the pulsars have. It's bright, but it's too small to be giving off much real heat. We could probably live in there ourselves." She looked around her. "Isn't this is what we came for? The strangeness of the universe. If we don't stop now, we might as well be back on Earth." The contempt in her voice was unmistakable.

Kendy's memory jumped at that point. Hardly surprising. That must have been the true beginning of mutiny.

He remembered reviewing and updating his files on gas torus mechanics.

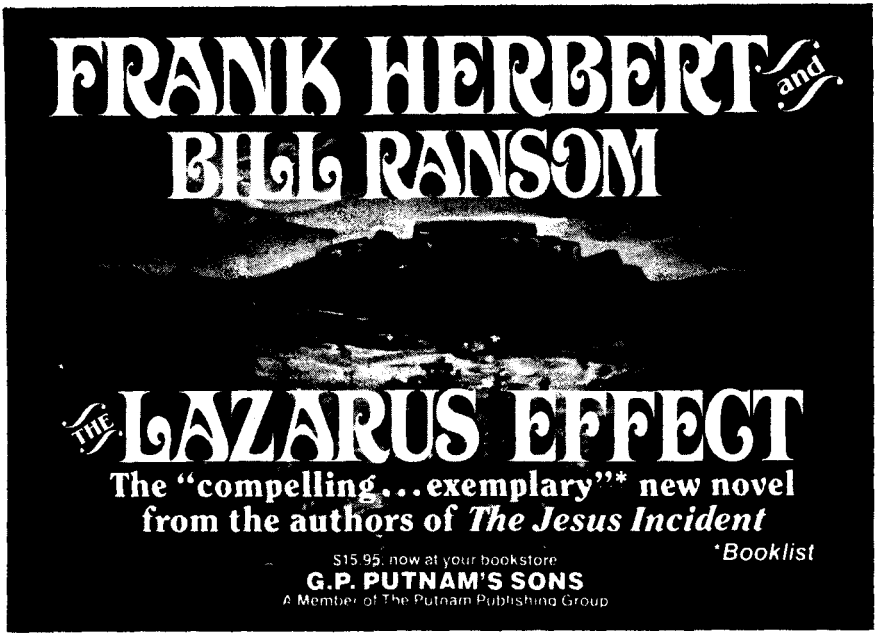
Two planets circled wide around the twin stars: Jupiter-style gas giants with no moons. The old supernova must have blasted away anything smaller.

A body did circle the neutron star. One limb of the Smoke Ring was curdled, a distorted whirlpool of storm. Hidden within was a core of rock and metals at 2.5 Earth masses. There was some oxygen and some water vapor in its thick, hot atmosphere. Goldblatt's World was tidally locked, and uninhabitable. Strip away its atmosphere and it might have harbored Earthly life . . . but its atmosphere was tremendous, dwindling indefinitely into the Smoke Ring itself.

The strong oxygen-water lines were coming from the gas torus.

A gas torus is the result of a light mass in orbit around a heavy mass, as Titan orbits Saturn. It may be that the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



light mass is too weak to hold its atmosphere. The faster molecules of air escape . . . but they go into orbit about the heavy mass. Thus, Titan circles Saturn within a ring of escaped Titanian atmosphere, as Io orbits Jupiter within a ring of sulfur ionized by Jupiter's ferocious magnetic field.

A gas torus is thin. The gas must be so rarefied that each molecule can be considered to be in a separate orbit: it must reasonably expect to circle halfway round the primary mass without bumping another molecule. Under such circumstances, a gas torus is stable. The occasional stray photon will bump a molecule into interstellar space; but the molecules are continually re-encountering the satellite body.

Titan—smaller than Mars, no larger than Ganymede—carries an atmosphere of refined smog at one and a half times Earth's sea level pressure. The atmosphere is continually being lost, of course, but some of it continually returns from the gas torus.

Levoy's Star was an extreme case, and a slightly different proposition, too.

The Smoke Ring was the thickest part of the gas torus around Levoy's Star. At its median it was as dense as Earth's atmosphere a mile above sea level: too dense for stability. It must be continually leaking into the gas torus. But the gas torus *was* stable: dense, but held within a steep gravitational gradient. Molecules continually returned from the gas torus to the Smoke Ring, and from the Smoke Ring to the storm of atmosphere surrounding Goldblatt's World.

"Goldblatt's World must have started life as a gas giant planet like, say, Saturn. Probably it didn't fall into range

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

until the pulsar had lost a good deal of its heat and spin." Sharon Levoy's crisp voice spoke within Kendy's memory. "Then it was captured by strong Roche tides. It may have dropped close enough to lose water and soil as well as gas. For something like a billion years Goldblatt's World has been leaking gas into the Smoke Ring, and the Smoke Ring has been leaking to interstellar space. It's not stable, exactly, but hell, *planets* aren't stable over the long run."

"It won't be stable that much longer," Dennis Quinn interrupted. "Most of Goldblatt's World is already gone. Ten million years, or a hundred million, and the Smoke Ring will be getting rarefied."

Kendy remembered these things. The records had been made while *Discipline*'s instruments probed the Smoke Ring from close range. Already some of the crew were exploring the Smoke Ring via CARMs. Their reports were enthusiastic. There was life, DNA-based; the air was not only breathable, but tasted fine. . . .

Kendy didn't remember bringing *Discipline* into orbit around Levoy's Star. He must have expended his onboard fuel, postponing by several years his arrival at the target stars along his course. Why?

Claire Dalton's voice: "We've got to get out of this box. It's running down. A little of what we recycle is lost every time around. There's more than water in there; there's air, there's probably even fresh fertilizer for the hydroponics tanks!"

It was Sharls Davis Kendy who ruled *Discipline*. *Discipline*'s crew of twenty was hardly necessary to run a seeder ramship. The State had chosen them as a reservoir of humanity: a tiny chunk of the State, far removed from any local disaster. One planet, one solar system, were too fragile to ensure the survival of the State or humankind itself. Every ship in the sky had a crew large enough to begin the human race over again: their secondary mission, if it ever became necessary. The State expected no such disaster, ever; but the investment was trivial compared to the reward.

When had he lost control? Perhaps they had threatened to bypass the computer and go to manual control. They couldn't; but morale would disintegrate if they ever learned how little control they really had. Kendy might have surrendered on that basis.

Or he might have been curious.

He did not remember any part of what must have been a mutiny. He must have been played for a fool; he might not *want* to remember that. The crew had departed with eight of the ten CARMs, and rifled the hydroponics to boot! It should never have been allowed.

He was reasonably sure that seven of the CARMs were inoperable. Some equipment might have been salvaged . . . and the last CARM had now ceased its spray of incandescent water vapor. Kendy ceased beaming his message. The Smoke Ring glowed white and featureless beneath him.

One day he would know. Would they remember him at all?

Kendy waited.

CONTINUED IN NEXT ISSUE

Copyright © 1983 by Larry Niven.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Jay Kay Klein's biolog

Walter B. Hendrickson, Jr. has been known to *Analog*'s readers since the March 1970 issue, which included his article about NERVA, the proposed atomic-powered rocket whose engineering was sounder than its financial base in the cut-back U.S. space program. (Reading his final, hopeful paragraph, one knows that the saddest things of all are those that never were: "Future historians may look back on the development of nuclear rockets as a step similar to the introduction of steam into ocean transportation.") A second article in that year's August issue detailed NASA's backpack for astronauts, which would permit them to maneuver outside spacecraft and the then-planned Orbital Workshop.

Wally first became interested in space travel during high school, when he read a series of articles by Wernher von Braun. At first he thought he'd write science fiction, but switched to nonfiction and especially writing about aerospace, a livelihood made practical by the excitement and national concern following Sputnik I.

Like Nelson Rockefeller, Wally overcame childhood dyslexia to engage in a distinguished career. After receiving an A.B. in English writing from Illinois College in Jacksonville, Illinois, he audited courses in biology, zoology, and the history of science at MacMurray College in Jacksonville, then TV techniques and writing at the University of Illinois in Urbana. Scholarly interests came naturally to him, having grown up with a father on an academic course leading to a doctorate in history at Harvard.

Thinking originally to become an architect, Wally continues painting and is a member of the Jacksonville Area Artists' League. As you might expect, he specializes in astronomical art, and has won prizes in amateur art shows for "Phobos-Rise over Mars" and "Mars-Rise over Phobos." Like *Analog* author Hal Clement's entries in similar shows, Wally's astronomical depictions are scientifically accurate.

A column titled "Rockets and Space" ran in the Jacksonville *Journal-Courier* from 1957 to 1963. A first story, "What's That Star," appeared in 1960, with a first novel, *Class G-Zero,* in 1976. Two new editions have come out in the past couple of years of *Who Really Invented the Rocket?* and *Manned Spacecraft to Mars and Venus;* the first received an award for Outstanding Book for Children in 1974 from the National Science Teacher's Association and Children's Book Council. More than a baker's dozen of books, such as *Handbook for Space Travelers* and *What's Going on in Space?,* have the Hendrickson name on them. A correspondingly large number of magazine articles have appeared in magazines ranging from *Air Progress* to *Better Homes and Gardens*.

When mentioning the notable happenings in his life, Wally lists first attending the Apollo, Skylab, and Columbia launchings. Some actors were born to play Shakespeare. Some generals were born to lead armies. Wally Hendrickson pretty obviously was born to write about space travel. ■

Walter B. Hendrickson, Jr.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

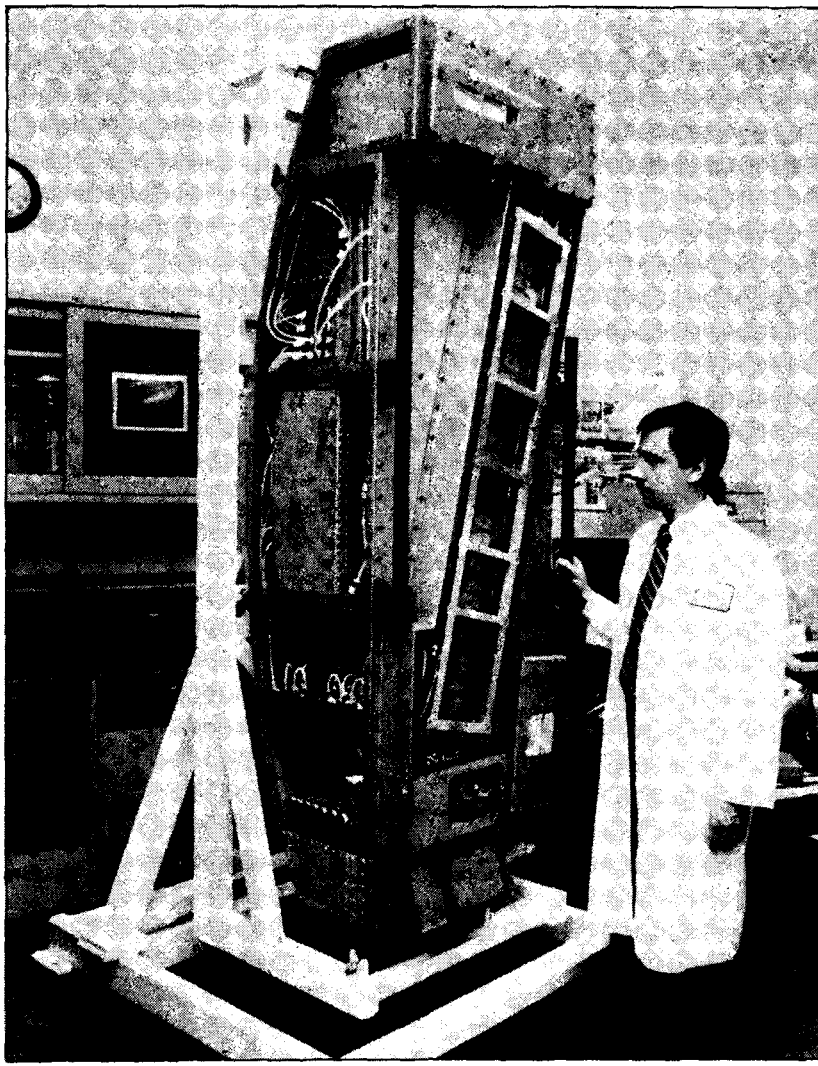


Photo courtesy McDonnell Douglas

Pharmaceutical processing device built by McDonnell Douglas Corporation is inspected by engineer Charles Walker. The continuous flow electrophoresis device is designed to demonstrate that the zero gravity of space can be used to produce pharmaceuticals in quantities and purity levels that cannot be achieved on Earth. The device, shown here in a white-painted fixture, is curved on one side to fit into the wall of the Space Shuttle in the mid-deck crew quarters.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

INDUSTRY IN SPACE

Walter B. Hendrickson, Jr.

We've long talked about the expansion of private industry in space. Here is how it's beginning . . . in reality!

Although it is generally conservative about new ventures, American industry is beginning to invest in processes that can be done only in space—or done better in space—to produce products unduplicable on Earth.

These products must be high-value items such as pharmaceuticals, optics, and microelectronics because, even with the space shuttle, transportation to and from space is still expensive. For example, when it was first announced in 1975, NASA's gateway specials cost $50 per pound.

In addition, NASA gets royalties on some materials processing in space (MPS), as well as information. If properly developed, materials produced in space could have a market value as high as $1 to $20 billion a year. Even a 10% royalty on this could make a handy contribution to NASA's budget.

"Hardware being developed today for the space shuttle and Spacelab should enable man within twenty years to start the first commercial space factories. Operations free from government financing appear likely some forty years after the first unmanned satellite was orbited. We are now at the midway point between Sputnik 1 and Space Factory 1," says Dave Dooling in Chapter 17, "The Space Factory," of *Space Technology*.

This space factory could be a self-contained unit made up of modules for power, living quarters, storage, and manufacturing. Each module would be brought up by a space shuttle, thereby limited to a maximum 65,000 pounds

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

measuring fifteen feet wide and sixty feet long. An alternative would be to attach the space factory to the Manned Orbital Facilities (MOF) now being planned by NASA. This would allow the space factory to use some of the modules of the MOF, although it might still need a power module.

Such a space factory would evolve out of current spacelab technology and would be flying about 1990. In the meantime, industry will have to be content with doing its materials processing aboard the space shuttle for up to thirty days, and on unmanned satellites for longer periods.

NASA got into the field of materials processing in space rather inadvertently in the 1960s. The agency's engineers were studying how weightlessness would affect the fuels of boosters waiting in orbit for reuse. They also show how the space environment would affect welding in the assembly of future space stations. Subsequently, specific materials processing experiments were carried on the later Apollo moon flights, Skylab, and the Apollo-Soyuz Test Project.

Like most missions in space, these experiments were funded by NASA. Now McDonnell Douglas of St. Louis, Missouri, and Ortho Pharmaceutical, a division of Johnson and Johnson, are developing the first materials processing in space experiment paid for entirely with corporate funds. Their device is called EOS, for electrophoresis operations in space. The EOS experiment also has been nicknamed the "space pharm" because it is designed to produce pharmaceuticals either of purer quality, or of a type which cannot be produced on Earth.

Just what types of pharmaceuticals the EOS will be producing, McDonnell Douglas is not saying. There are, however, a number of possibilities, including beta cells, a possible cure for diabetes, which can be produced only in space.

"Any promising results from the joint endeavor are intended to be translated into commercial sales. In this event, McDonnell Douglas will act to make the products available to the public on reasonable terms," says James Rose, manager of McDonnell Douglas's space processing work. Nevertheless, the drugs from space may be worth some $23 billion/year.

The reason EOS can be so lucrative is the basic process itself. Electrophoresis is the separation by electricity of organic molecules in an acid or alkaline water solution. Most of the organic molecules will pick up a charge, and some will outrun the others, making it to the electrode first. The trouble on Earth is that of gravity causing heavier molecules to drop out of the race, while lighter ones float to the top of the mixture.

Three and a half years of testing on the ground have shown McDonnell Douglas that EOS will overcome these difficulties, although not quite as completely as might be expected. This is because things in orbit are not under true zero-g, or weightlessness, as commonly believed. Actually, each free object is in its own orbit around Earth. This causes things outside to drift away, while things inside a spacecraft even-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tually strike a wall. The impact is about 1/1,000 or 1/10,000 of what it would get on Earth. This is far too low for an astronaut to feel, yet it has its effect on MPS. The results of MPS, however, still have a great advantage over those on Earth.

In McDonnell Douglas's case, this means purer organic mixtures for pharmaceuticals. To test this in space, McDonnell Douglas has developed a device to be flown on seven space shuttle flights. The first of these was the *Columbia*'s final test flight in June 1982.

The EOS equipment is a six-foot-high, eighteen-inch-wide cabinet mounted against the aft wall of the space shuttle's mid-deck. In this cabinet the separation takes place under the control and monitoring of a mini-computer. Products of the experiment are stored in an attached container for later study.

Six separation cycles of about ten minutes each are planned for each flight. If these pilot tests get the expected results, McDonnell Douglas plans to move to a larger EOS system called CFES, for Continuous Flow Electrophoresis System. This will be carried in the space shuttle's cargo bay. Weighing 5,000 pounds and measuring four feet by fourteen feet, this prototype CFES space factory would contain twenty-four separation chambers. The CFES could be putting FDA-approved drugs on the market by 1986.

For longer operation the CFES could be fitted with its own power supply, and then tossed out of the space shuttle to operate in orbit by itself. Space shuttles would then visit the CFES every six months to collect the products of this "space pharm."

McDonnell Douglas is not the only industry planning business ventures in space. GTI, an electronics firm, is preparing a multicavity metallurgical furnace (MCMF) to be flown on the seventeenth flight of the space shuttle, scheduled for the third quarter of 1984, and on later flights in mid-1985 and in the first half of 1986.

Unlike McDonnell Douglas, GTI is not planning to market products from its space factory directly to the public. Instead they are planning to rent out the thirty-seven cartridges in the MCFM to firms specializing in metallurgy on a small scale. At first NASA will be paying for the flights, but GTI plans to continue with the project after the first test flights. They hope to make enough money from the rent to pay the freight bill to space, and still make a handy profit by attracting industries from both inside and outside the aerospace field.

Like McDonnell Douglas, GTI isn't saying exactly what products it expects to be developed with its MCFM. There are, however, some 500 new alloys, such as aluminum-indium, which can not be produced on Earth. These are the miscibility gap alloys, so called because the two metals separate in the molten state. Then, as the material cools, one metal solidifies into droplets, while the other remains liquid. On Earth these droplets would precipitate out, but in orbit the droplets would remain in suspension until the remaining material solidifies, producing a new alloy.

"If producible, such materials might

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

have such diverse applications as electrical contacts (as replacements for silver and gold) and self-lubricating bearings," reports E.C. McKannan in his NASA Technical Memorandum, *Survey of the U.S. Materials Processing and Manufacturing Program*.

The MCFM is small compared to most modern space experiments. It is a 200-pound cylinder measuring twenty inches in diameter and sixteen inches in length. Each of its cartridges is encased in a vacuum insulator; helium is used to quench the heat of metal working. On the outside these cartridges measure about two inches in width and about thirteen inches in length. They can handle metal samples up to about half an inch wide and about one inch long.

The astronauts aboard the space shuttle will have to start the MCFM and monitor the progress of the experiment. The actual metal-working, however, will be performed by a microprocessor which will sense the heat in the cartridges with thermocouples. After the flight the MCFM will be plugged into a ground-based computer which will analyze the data collected.

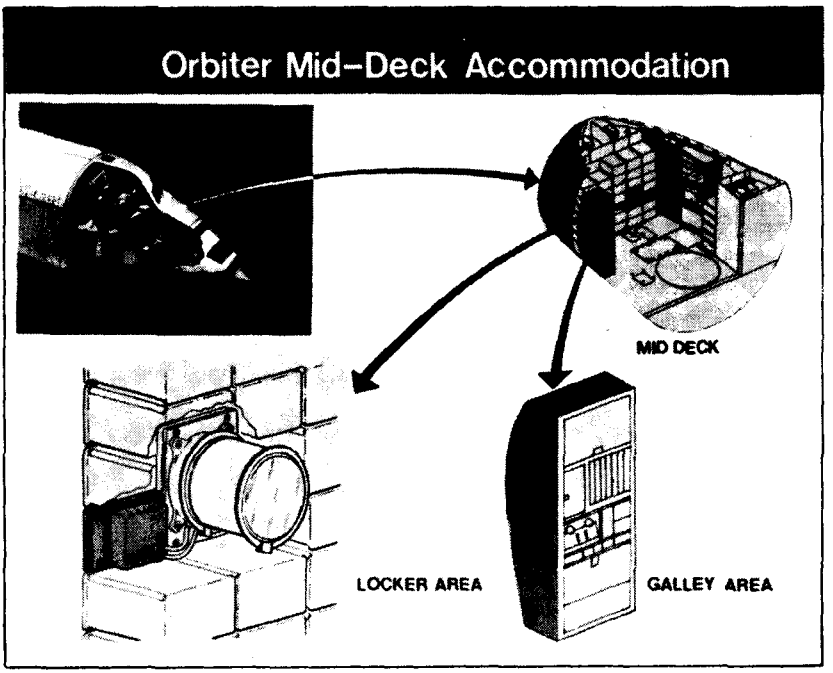


Photo courtesy National Aeronautics and Space Administration

This diagram shows two possible locations for materials processing experiments to be carried aboard the Space Shuttle.

Another MPS which McDonnell Douglas has its eye on is the manufacture of silicon chips for microproces-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

sors. On Earth they are formed in long cylinders, much like drip candles. These cylinders are then sliced into wafers two, three, or four inches wide. The circuits are built up on these wafers, which are then cut apart into the actual grain-of-salt-sized micro chips. The trouble is that every time a tool touches the silicon some of the silicon is lost. About 33% is lost in making wafers, and still more in making the chips, so that only 8% finally reaches the market.

"McDonnell Douglas Astronautics Corporation thinks it can do better in space. A continuous ribbon of silicon 0.001 in. (0.25mm) thick could be drawn from a ball of silicon heated in a solar furnace," says Dave Dooling. TRW of Cleveland, Ohio, estimates that even if this process captured only 10% of the silicon chip market by 1990, it should be worth $440 million a year.

TRW has its own candidate for materials processing in space: optical fibers. These suffer from the same nemesis as the other processes we have covered —gravity. It causes the optical fibers to develop stress flaws which limit their usefulness. In space this difficulty would be eliminated, producing optical fibers which could be worth from $69 to $690 million by 2010.

By this time, if such visionaries as Princeton's Dr. Gerard K. O'Neill are correct, we will have mining on the moon and large mills and factories in space. These factories will thus be able to get materials off the Moon, which has one-sixth the gravity of Earth. While O'Neill's lunar mines and space factories are designed to produce space colonies, they could produce other products on the side.

Thus industry in space, which has been called the third industrial revolution (mechanization and automation were the first two), is following the pattern of the first. It is beginning as cottage—or rather, space cabin—industry. Next will come small independent space factories, and finally large space mills and factories. ■

● Half the sorrows of the world, I suppose, are caused by making false assumptions. If the truth were only easier to ascertain, the remedy for them would consist simply of ascertaining it and accepting it. This business, alas, is usually impossible, but fortunately not always: now and then, by some occult process, half rational and half instinctive, the truth gets itself found out and an ancient false assumption goes overboard.

H.L. Mencken, *A Mencken Chrestomathy*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"General Lee." A statement. A greeting. A question. "General" with a hard "g," and each syllable precisely enunciated. And something odd about the accent. More like "Gaynayral Lay."

The two officers in gray jackets stared down from their horses at the stranger who stood by his own mount, a beautiful bay. The soft radiance of the paschal moon revealed a man in uniform, but the jacket and trousers were neither blue nor gray. The newcomer was dressed in black. From his bearing, clearly a soldier. Rank uncertain.

The stranger saluted the tall officer with the white beard. "General Lee, I am Oberst Karl von Mainz, of the Army of West Germany."

If General Lee was puzzled, he concealed it well. He returned the salute and nodded toward his companion. "Colonel von Mainz, my aide, Major Potter." He studied the visitor a moment. "I presume you are a military attaché from his majesty, King William of Prussia. Welcome, sir. We haven't had an attaché since the British Colonel Freemantle rode with us to Gettysburg. You must have overcome incredible hardships to join me here at Appomattox Court House, and quite possibly to no purpose." He peered through the semi-light. "I don't remember you in Richmond. How did you get through? The roads are jammed with Union troops."

"I used . . . a different approach, Herr General."

"Ah? Well, no matter. Major, would you please extend our hospitality to the colonel?"

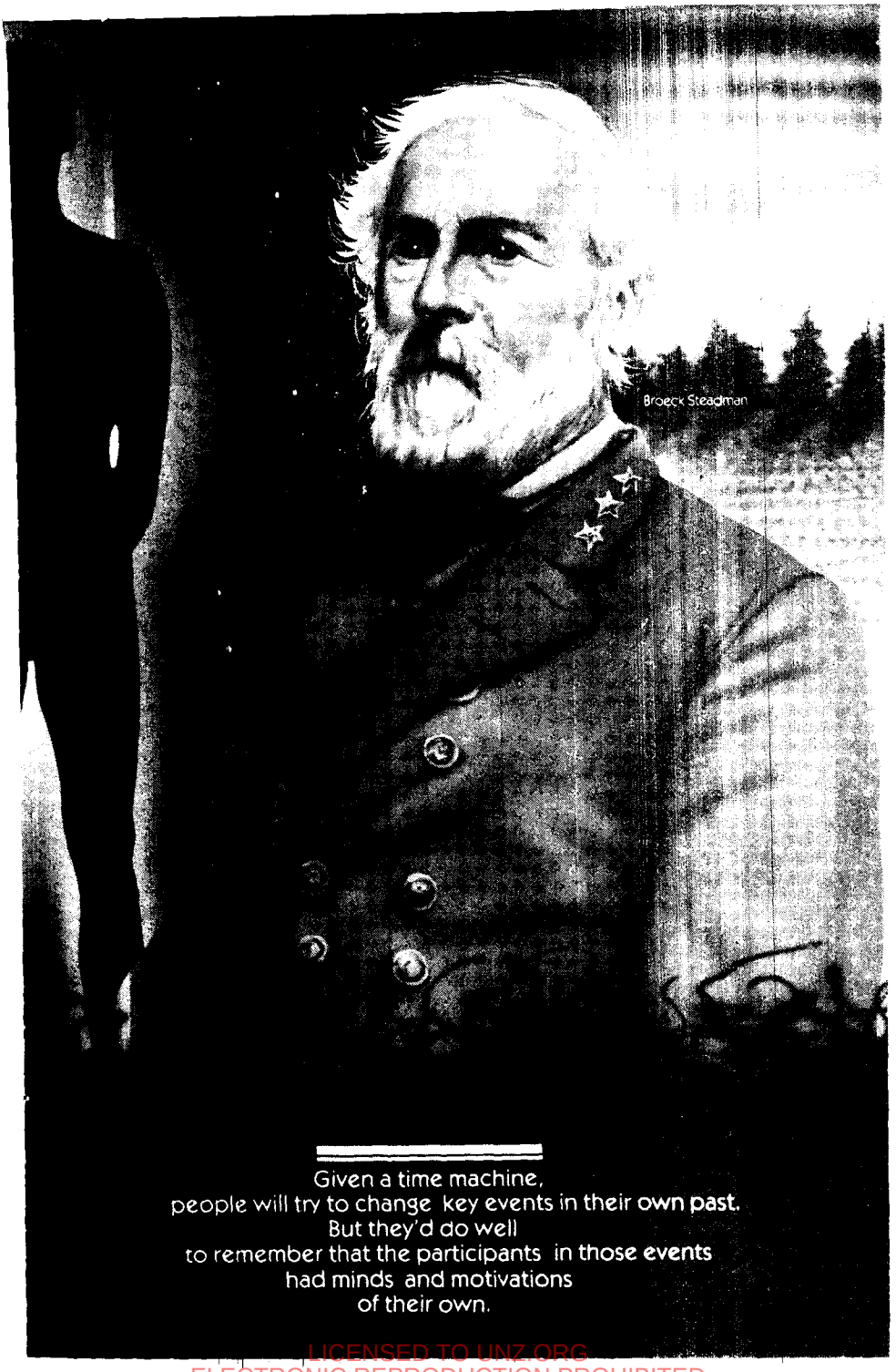
His aide sighed. "It's parched corn and creek water, sir. No coffee. No tea. No brandy."

Robert Lee thought back. A Richmond lady had entertained him in her parlor a few months ago. She had given him a cup of real tea, made from what were probably the last genuine tea leaves in the doomed city. She had drunk her own cup of "tea," which he knew to be dark water from the James River. He had never let on. She had sipped, and she had smiled. A true Southern lady. All this was passing away. He said, "By your leave, Colonel, I will now retire. There will be action tomorrow morning that decides whether the war is over or whether it continues."

Charles L. Harness

QUARKS AT APPOMATTOX

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



Given a time machine,
people will try to change key events in their own past.
But they'd do well
to remember that the participants in those events
had minds and motivations
of their own.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Herr General, I know all about that. The Army of Northern Virginia now consists of two small infantry corps —Gordon and Longstreet—and a little cavalry. And you are in a tight box. On your east is General Meade, with the Second and Sixth Corps. To the west is Custer and most of the Union cavalry. To the south is Sheridan's cavalry. That's the bottom of the box, and that's where the Union lines are weakest. You propose to break out through Sheridan, move rapidly south on the Lynchburg Road, join up with General Johnston in North Carolina, and drag the war out until the North is willing to negotiate an honorable peace. But it won't work, Herr General."

General Lee looked at the German for a long time. "Sir, you seem to know a great deal about the tactical situation. So tell me, why can't I break out through the south?"

"Because, Herr General, history has already written the dénouement of this, your last campaign." He did not look at Major Potter. "May we discuss this in private, Herr General?"

Lee shrugged. "Very well." He dismounted and gave the reins to his aide. "Oh, it's perfectly all right, Potter. We'll be in the tent."

A stump of candle was already burning on the cracker box when they went inside. The Confederate officer motioned to the camp chair, then eased himself down on the cot. "I think we can push through Sheridan," he said.

The other nodded. "True, in the dawn fighting you will push back Sheridan's dismounted cavalry. Your boys will cheer. But that's the end of it. General Ord's Fifth Corps arrives just in time to reinforce Sheridan. The great game is over. You send out a rider with a white flag. At eleven tomorrow morning, Palm Sunday, you will send General Grant notice that you would like to meet him to discuss surrender terms. You will accept his demand for unconditional surrender. Tomorrow afternoon, except for a little scattered action in other theatres, the war will be over."

Lee was silent.

Von Mainz shrugged. "You think I am insane? I am not insane, General Lee. I know many events that lie in your future."

"How is this possible?"

"You think of me as a loyal subject of King William of Prussia and an officer of the Prussian army, in this year eighteen hundred five and sixty. Not exactly, General. I am not what you suppose. There are two very basic facts that you must accept. If you can accept these two facts and all that they imply, then you can understand everything you need to know about me. Fact number one, I am from your future. I was born in the year two thousand and thirty. I am thirty-five years old. I left the American Sector of Berlin this morning, April 8, in the year two thousand five and sixty, almost exactly two hundred years in your future. I am indeed a colonel, but not in the Prussian army. I am a colonel in the Neues Schutz-Staffeln —the 'NSS'—an underground paramilitary organization devoted to reuniting West and East Germany." He waited. "You don't believe me? Not just yet? No matter. I assure you, I can provide proof."

"West Germany . . . East Ger-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

many?'' said Lee. ''I don't understand.''

''Never mind. It's a long story. With the general's permission, I'd like to state the second fact.''

''Proceed. What is your second fact?''

''The second fact is that you can win the war. Not merely the impending battle. You can win the whole war.''

Lee looked at him sharply. ''How?''

''With a new weapon.''

The older man smiled faintly. ''Which you brought with you, of course, from your twenty-first century?''

''Of course. And please do not smile, General. It does not become you; nor is it fitting to the occasion.''

Lee stood up. ''Now, you really must excuse me, Colonel. Tomorrow will be a difficult day.'' He walked to the tent door. ''There's Potter over there, by the napoleon. He'll find a place for you to sleep.''

Colonel von Mainz joined him at the tent door and peered out into the moonlight. ''A napoleon. Hah! The deadliest cannon of the war. Favored by both sides. Range, one mile. With canister at two hundred yards, wipes out an entire platoon. Like a giant sawed-off shotgun. The difficulty is, Grant has three times as many as you have, as well as plenty of powder and skilled gun crews. But you can even the odds, my General.'' The stranger flashed black eyes at his reluctant host. ''May I demonstrate?''

''Go ahead.''

Von Mainz smiled, then held a finger up. ''On the other hand, General, it would be more convincing if you performed the experiment yourself.''

''Really, Colonel—''

''Would the general please pull out the weapon from my rifle boot.''

Lee walked over to von Mainz's horse, pushed the saddle bags aside, and tugged at what appeared to be a plain rifle stock. The thing came out with a long squeak. Lee carried it into a patch of moonlight for a better look. He frowned. ''It's not a rifle . . . ?''

''Not exactly. Now then, shall I retire with your Major Potter, or do you want me to tell you about this . . . instrument?''

''Hm. It's a weapon, you said?''

''It is, indeed.'' The visitor smiled and crossed his arms over his chest.

''What does it fire?'' asked Lee.

''Something in the nature of an electric charge.''

''Electricity? For heaven's sake! But to what effect?''

''See for yourself. First, ask the good Major Potter to move a few meters away from the napoleon.''

''Very well.'' Lee called out, ''Major—move away to your left a bit. There. That's fine.''

''Now,'' said the visitor, ''take it to your shoulder and hook your finger around the trigger, just as you would a rifle. Aim it at the cannon barrel.''

''What's this on the barrel?'' muttered Lee. ''A telescopic sight? No —what in the name of heaven! I can see everything, plain as day!''

''A snooperscope,'' explained Von Mainz. ''It senses infrared radiation.''

''Whatever *that* is,'' said Lee. He began to perspire.

''A gentle squeeze on the trigger,'' prompted the German.

Lee felt a faint click as he closed the trigger.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The cannon seemed to vanish. The great Confederate first squinted; then his eyes opened very wide. Something was still there. Dust. Metallic dust glinting in the soft moonlight. Now beginning to settle. And a clatter as the wooden wheel spokes and undercarriage collapsed.

Lee hurried out to the shambles, followed by von Mainz. The general poked into the dust clumps with a boot toe. He bent over, picked up a handful, and smelled it cautiously. A faint odor —something like the residue of a lightning strike. He tossed the dust aside.

Major Potter ran over to Lee. "General! Are you all right? What happened?"

Lee stared first at his aide, then at the German colonel. "Potter, everything's fine. Excuse us, please. The colonel and I still have somewhat to discuss." He handed the strange weapon gingerly to von Mainz and motioned him back into the tent. The candle sputtered at the sudden draft.

"There are five more such weapons in my saddle bags," said von Mainz. "They merely require assembly. So. What do you think? Do you believe me now?"

"I believe," said Lee, "that I have seen a remarkable thing." He sat on the cot and motioned to the chair again. "How does it work?"

"I'm not a technical man—but I think I can give you the basic theory. You've heard of atoms, of course?"

"Yes."

"Atoms are made up mostly of even smaller particles called protons and neutrons. These in turn consist of sub-particles called quarks. These quarks are held together by a thing called the strong force, or color force. It's also called 'gluon,' because it functions like glue in holding the quarks together." He peered over at the tired gray face. "Do you follow me, General?"

"No, I'm afraid not."

"Well, I'm sorry. Shall I go on?"

"Please do."

"Very well, then. It appears that quarks have at least five flavors: up, down, strange, charm, and bottom. But we'll skip all that. The point is, General, that in my birth year, two thousand and thirty, a means was discovered to desensitize the gluon associated with the so-called *down* quark, which exists in neutrons of the structural metals. Since neutrons are made of one up-quark and two down-quarks, the consequence was that such metals could readily be caused to disintegrate. Your napoleon is—was—brass, an alloy of copper and zinc. Brass is quite susceptible. But so are musket barrels, swords, all the iron and steel instruments of war. Even the harmless things yield to it: belt buckles, buttons, stirrups, mess kits, telegraph keys, telescope barrels, spectacle rims. . . ."

The general patted his jacket pocket uncertainly.

Von Mainz laughed. "Your glasses are safe, General. The weapon never backfires."

Lee studied his visitor in silence. Finally he said, "The demonstration was indeed a success. Quite remarkable. I accept it as proof that you are from another time and place. But *that* simply

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

raises additional questions. How did you get here from the future? What is it to you whether the South wins or loses? Why did you select *me* for your presentation?''

''Not so fast, dear General. Good questions, all valid, and there are answers. Why *you?* Why *you?* You are the commander-in-chief of all the armies of the Confederacy, and your army has a very pressing need for the weapon. You were therefore the logical choice.

''Now then, how did I get here? Not quite so easy to answer, but I can try. There is a device—really an entire cellar room—in Berlin. It is associated with an immense power source, all very accurately calibrated. In the center of the room is a sort of plate, a machine, actually, very cleverly constructed. A person stands on that plate, together with certain things he may wish to bring along, even including a horse. Then the dials are set to a specific time and place in the past, a compatriot pulls a switch, and the plate—is empty. If the warp is accurate, the person in the chair moves from Berlin twenty sixty-five to . . . wherever, whenever. . . .''

''I . . . see,'' murmured the general. ''I think I see.'' He put his fingers to his forehead. ''So here you are. But *why?* What difference does the outcome of this war make to you . . . to the NSS . . . to the Germany of the twenty-first century?''

''*Why?* Because I—my group—we want to change the past, and hence the future fate of the German people. You and I together can do this.''

''Go on.''

''As I'm sure you realize, General, that in the history about to be written the South loses the war. The Union is reestablished. The United States spreads across the continent from 'sea to shining sea,' as your hymn says. Very quickly America becomes rich and populous. But she is not done with war. There will be a great war in nineteen fourteen to nineteen eighteen: at the start, Germany against England, France, and Russia. We would have won this war, except that America came in against us. Germany rose from the ashes and in nineteen thirty-nine tried again, against almost the same enemies. Again, we almost made it. Our armies lay on the outskirts of Leningrad—oh, St. Petersburg to you. We could see the church spires of Moscow. But once more America came in against us. America sent Russia immense quantities of war materials: shipload after shipload through the Persian Gulf, and in the north by Murmansk. These weapons you would find quite incredible. Self-propelled cannons with iron plating, called 'tanks.' Machines that flew through the air, capable of dropping terrible bombs. And big horseless carriages for moving troops rapidly. Our German armies had these things too, of course, but in nowhere near the numbers the Americans were able to furnish our Russian enemies.'' He sighed and took a deep breath. ''In nineteen hundred three and forty the Russians began a general counterattack across the entire eastern front—some twelve hundred miles long. For us it was the beginning of the end. We gave up two years later.''

''But you speak of history. All that will happen whether the South wins or loses.''

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"No, we think not. Our forecasters have made a number of studies on great machines called computers. The results agree as to several essential points. If America exists in two countries, North and South, neither would possess the industrial and manpower resources to make a difference in the war of nineteen fourteen to nineteen eighteen. Germany would have won. The German emperor—the kaiser—would have stayed in power, and there would have been no need for the war of nineteen thirty-nine to forty-five. Stalingrad . . . Lend-Lease . . . our Fuehrer committing suicide in a bunker in Berlin . . . all moot . . . will never happen."

"You are telling me, sir," mused the general, "if the South wins now, in eighteen sixty-five, Germany wins in nineteen eighteen."

"Exactly." The visitor smiled crookedly. "And more than that. The world wins. For twenty million people are scheduled to die in the war of nineteen thirty-nine to forty-five. They would live. And that's not all. American develops a bomb capable of destroying all humanity all over the globe. If the South wins in eighteen sixty-five, that bomb would not be available in nineteen forty-five."

"Interesting. And very curious. I can see that science is due to make immense strides in the decades ahead. But tell me—this present weapon—this strange rifle—what do you call it?"

"Dis. Short for disintegrator."

"Was it—perhaps I should say *will* it—be used in one of your future wars?"

"No, general. Happily—or unhappily—the radiation is readily nullified by insulating the metal with a certain coating."

"Suppose the North discovers this defensive coating?"

"They won't. It requires an alloy that won't be available for a hundred and fifty years." He looked at the general expectantly. "Well, sir?"

Lee seemed lost in thought. Finally he said, "No, I cannot accept the weapon."

Von Mainz was astonished. "But *why?*"

"Colonel, I can say a thing to you, a total stranger, that I cannot say to Mr. Davis, or to any of my own officers, or even to my wife."

"Sir?"

Lee's voice dropped. He said quietly, "I believe that the Almighty wills that the South shall lose."

The man from the future stared at him.

Lee said, almost sadly, "I am convinced at last that God has been trying to give me a message these past four years. I could have won at Sharpsburg in '62, except that one of my officers used my battle plan as a cigar wrapper, and it fell into McClellan's hands. And I would have won at Gettysburg if Stonewall Jackson had been there. But he had been shot at Chancellorsville by his own picket—another freak accident. And last year, in the battle of The Wilderness, victory was within our grasp. Longstreet was reaching out to take it—when he was shot by his own men. Another ghastly and impossible mistake. And that's not the end of it. Last year in his march to Richmond, Grant split his army to cross the North Anna River—Warren on the right, Hancock

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

on the left. I moved in between them, and I could have smashed first one and then the other, except that I fell ill. If we had won on any of these occasions—Sharpsburg or Gettysburg or The Wilderness or on the North Anna, Britain and France would have recognized the South as a new nation. The North would have had to lift the blockade. Money, arms, food, everything would have poured in. We could have negotiated an easy peace with Washington, and we would have remained in permanent fact the Confederate States of America. But Providence intervened. Always at the critical place, the critical hour. I believe it to be the will of the Almighty."

"The will of the Almighty?" Von Mainz's jaw dropped. "Is childish superstition to decide this great struggle? *Gott im Himmel!* Is the strain finally too much?" He peered in hard suspicion at the man on the cot. "Let us face the realities, Herr General. Look at the facts! Lincoln has already carved your beloved state in two. The western section he calls West Virginia. The federals hold your plantation at Arlington. Your wife is an invalid in Richmond, and the city is burning. Are these calamities the will of God? Your son Fitzhugh rots in a federal prison. The war has already killed his wife and two children. And your own daughter Annie. Do you see in this a divine plan, General? Your army is starving. No rations in two days. You are finished. When this is over, General, the best that life can offer you is presidency of a tiny southern college with an enrollment of forty-five students."

"All that you say is true, and it is tragic," said Lee. "But some day the country will be great once again. Lincoln will see to that. He will not permit the South to be ground down like a conquered province."

Von Mainz laughed softly. "Lincoln dies one week from today. He will be assassinated while attending a play at Ford's Theatre in Washington."

The candle flame shuddered as Lee's head jerked up. "No!"

"Yes. History, dear General. And to your beloved South, terrible things are done by Lincoln's successors."

Lee groaned. "But the common people . . . we are of one blood . . . we are brothers."

Von Mainz shrugged.

Lee leaned over, stuffed a loose trouser leg back into a Wellington boot top, then tried to get up. His mouth twisted with pain.

His visitor leaned forward, concerned, but the older man waved him back. "Rheumatism, Colonel. I'm an old man. My joints. . . ." He was up. "I cannot take your weapons, Colonel. I will take my chances on breaking out tomorrow. I think it pointless for you to remain any longer. How will you return to your time?"

"No problem, General. I step out into the darkness. There's a sort of gate, near where my horse is tethered. I go through with my weapons, and you never see me again. I'll leave the bay behind. He's yours, if you want him. Remind General Grant that in your army, the horses belong to the men personally, not to the Confederate government."

"If it should come to that."

"It will." The colonel looked overhead at the full moon. "Perhaps it's all

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

for the best. You've heard of Jules Verne?"

"The French science writer? I've heard of him. Never read any of his books, though I understand *Five Weeks in a Balloon* was quite popular with our young people."

"Yes. And this year, *From Earth to the Moon*."

"Wild fantasy, Colonel."

"Is it? Your great *United* States of America will launch a manned ship from Cape Canaveral and it will land on the Moon, following which it will safely return to Earth. It will do that in just about one hundred years from now. And I have seen the return of the first *interstellar* ship. The ion engine was designed in Washington and Lee University."

" 'Ion' engine? All after my time. And I don't believe I know the institution. Any connection with the Lees of Virginia?"

"Very close, General." His guest smiled wryly. "The starship, incidentally, was named the *Robert E. Lee. Auf Wiedersehen*, Herr General." He saluted, and disappeared through the tent flap.

The old soldier stared after him. Over a quarter million Southern lads dead in this war. It had lain within his power to make good their sacrifice, and he had thrust it aside. What would Stonewall Jackson think? And Jeb Stuart, and A.P. Hill? Were they all whirling in their graves?

Was he a secret Unionist at heart? Did he see this bountiful land stretching in a single golden band from Atlantic to Pacific, and from New Orleans to the Canadian border? Did he secretly think all men should be free? He had never owned a slave, except briefly, when he inherited a few from his mother-in-law. He had promptly emancipated them.

How much humiliation lay ahead for him, and for the army?

It was morning, and he was looking toward the south with fieldglasses.

"We got through Sheridan," he muttered. "But that's the end of it." He handed the glasses to his aide. "That's Ord coming up, isn't it?"

"Ord? Can't make out the regimentals, sir. Yes, I'm afraid so. A corps, at least."

"Row on row of blue," murmured Lee.

"Sir?"

"Never mind. The war's over, Potter. Signal General Gordon. He knows what to do."

"But—"

"Get on with it, Potter."

Wilmer McLean had a horrid sinking feeling in his gut. He knew now that the Almighty had had his eye on him in this war, from start to finish. On July 21, 1861, General Beauregard had requisitioned McLean's fine farmhouse near Manassas, and had just sat down to dinner, when a cannonball crashed into the dining room fireplace, thereby announcing that the federals were on their way to Richmond. So Wilmer McLean had sold out and moved south and west, to the village of Appomattox Court House, and here had built an even finer house, where by all logic he should have been able to farm in peace and quiet, out of the path of armies.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

But Fate had decreed otherwise. For just now his carriage circle and his front yard and his porch and his parlor swarmed with more generals and lesser officers —of both sides—than there were bees in his blossoming apple trees.

They all stopped talking a moment and made a path for an unkempt, slouched-over officer in a mud-spattered blue uniform. "Is General Lee up?" he asked. Somebody said yes, and he walked up on the porch and into Wilmer McLean's house.

"The rest is easy, General Lee," said General Gordon. "Our troops just march off down that road there, stack arms in the field at the right, and then they go home."

"There's a line of Yankees along the roadside," said Major Potter uneasily.

"Don't worry, Potter," said Lee. "That's Chamberlain's brigade. Just to keep order. Decent chap, Chamberlain. Used to be a college professor."

"There go my boys," said Gordon. "I'd better get out there with them."

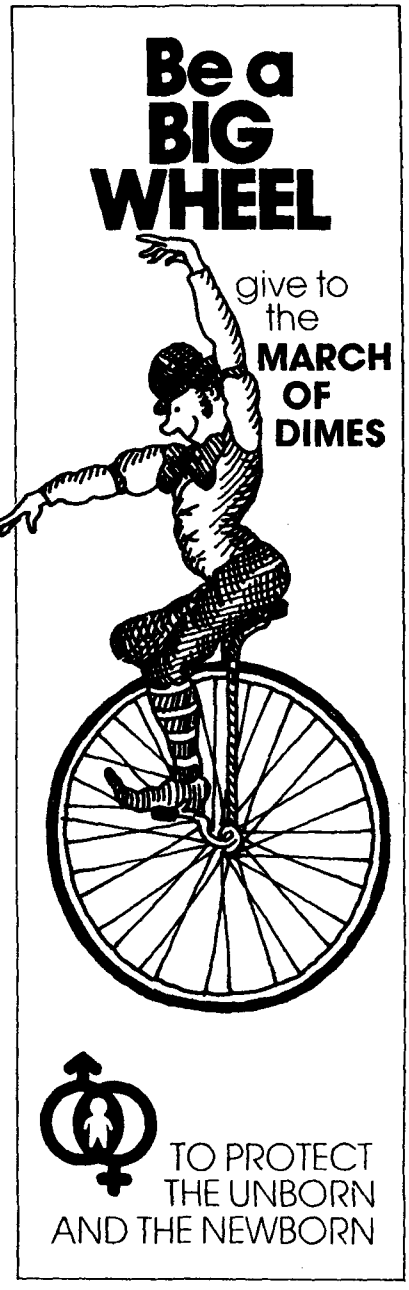
"Yes, of course," said Lee. "Go on."

The officer cantered away.

From somewhere ahead a bugle shrilled. It echoed and re-echoed down the road. Then General Lee and his aide heard a hoarse shout, repeated up and down the blue line along the road, then the slapping of thousands of rifles on hardened palms.

Major Potter stood up in his stirrups. "My God, sir! What—!"

"It's all right, Major," said Lee quietly. "General Chamberlain has just given his Yanks the order for 'carry arms.' It's the 'marching salute'—the



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

highest honor fighting men can give other fighting men." His eyes began to glow. "And look at Gordon. He's standing his horse up. His sword is out, and he's ordering : . . our boys to return . . . the salute." He coughed softly. "Dusty hereabouts, Potter."

"Yes, sir."

The *United* States, thought Lee. Both sides are going to try. We've got the future. It's all ahead of us. There for the taking. Science, that's what we need. Math. Chemistry. Physics. That's the road for our young people. And we need a vision. This fellow Verne has a vision. Get his books.

Potter was trying to ask him something. "What now, sir?"

Back to earth. "Where do you live, Major?"

"Florida, sir. My folks have a little farm on the Atlantic side."

"I was there in '61, trying to strengthen the forts. Where is your farm, Potter?"

"You probably never heard of it, sir, a place called Cape Canaveral."

"Oh, but I have, Potter."

"Really, sir?" The ex-officer looked at the man in gray with pleasure and astonishment, but no explanation was given him.

"Let's go home, Potter." Lee wheeled his horse and cantered off toward Richmond. ■

● On any matter not self-evident there are ninety-nine persons totally incapable of understanding it for one who is capable; and the capacity of the hundredth person is only comparative, for the majority of the eminent men of every past generation held many opinions now known to be erroneous, and did or approved numerous things which no one will justify. . . . In the case of any person whose judgment is really deserving of confidence, how has it become so? Because he has felt that the only way in which a human being can make some approach to knowing the whole of a subject is by hearing what can be said of it by persons of every opinion, and studying all modes in which it can be looked at in every character of mind.

John Stuart Mill, "On Liberty" 1859

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ON GAMING

Dana Lombardy

In almost every role-playing game, you play the part of a fictional character. Your alter-ego in the game—whether a wizard, elf princess, or Conan-type warrior—is created by rolling dice to randomly determine fictional strengths and abilities.

But what if you had the chance to just be yourself in a game? What if your game character wasn't make-believe? What if you could play *you . . . ?*

Timeship by Yaquinto Publications (Box 24767, Dallas, TX 75224) is the first role-playing game that allows you to adventure into the past or future as *yourself*—not a fictional character. The ideal number of players is three, plus referee or Timelord. *Timeship* can't be played solitaire, and more than three players may become cumbersome. If you're familiar with the television series "The Time Tunnel" and "Voyagers," you've got the basic idea behind *Timeship*.

You start the game at an average ability level (point value "50") for the use of weapons and each of the six game attributes: speed, endurance, intelligence, strength, dexterity, and agility. These point values can be modified to more closely resemble how you really are.

For example, if you're not athletically inclined, you would decrease the speed, endurance, strength, and agility values, but at the same time you'd probably increase the intelligence point value. You can also overstate your abilities slightly by adding points in appropriate categories, although the Timelord will not allow blatant exaggerations. The game rules are flexible enough for you to create a gaming character that mirrors your positive and negative abilities, based on your own judgement.

One other key factor in the game is the unique idea of Player Power. You roll dice to randomly obtain the amount of personal energy you have, and the group as a whole also rolls the dice to obtain the group energy level in points for the adventure. These energy levels are critical, because they're reduced through performing certain activities and taking damage.

For example, to carry a 20th-century handgun back to the 19th century would take a minimal power cost, but to take that same gun back to the 10th century would cost enormously.

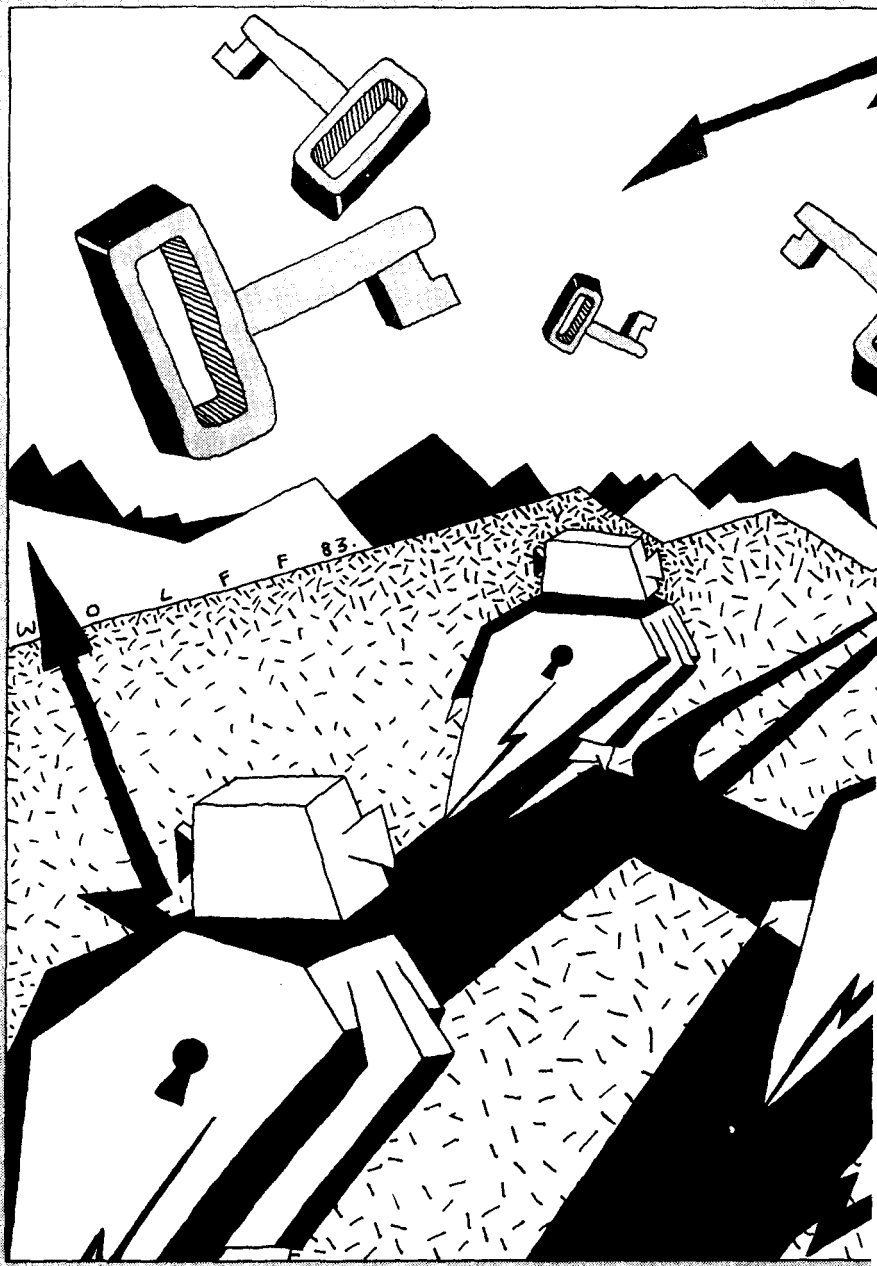
The group energy is important because, with it, you open the time portals, or gateways, allowing you to move from one time period to the next. If the group energy level drops too low, you could be stuck in the past or future.

Timeship comes with a 48-page rules book, of which about 17 pages are actual rules. The rest of the book is a very readable introduction to the discovery of the timeship written by novelist Herbie Brennan, plus three adventure modules.

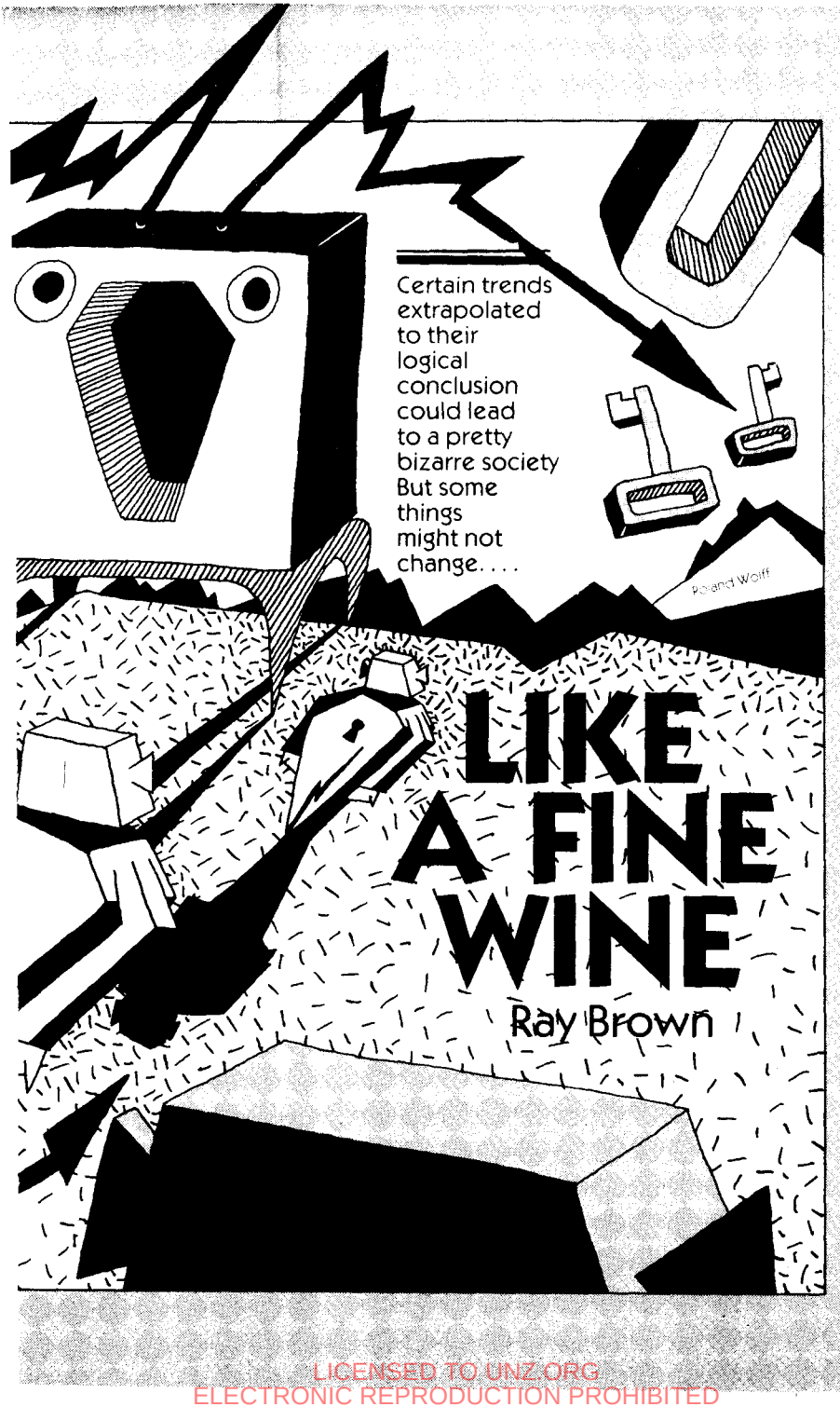
The game also includes two 20-sided dice; a 6-page folder (or referee's screen) with all the charts and tables the Timelord will need to consult during the

(continued on page 137)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED


Certain trends extrapolated to their logical conclusion could lead to a pretty bizarre society But some things might not change. . . .
Roland Wolff
LIKE A FINE WINE
Ray Brown

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The prospect of visiting with the two oldsters in an official setting made Gregg Lilly nervous—in all his life he'd never, on his own, taken a mature person to task—so he asked Irv Krupp, the secretary, to bring him their files to review beforehand.

Fifteen minutes later Krupp sauntered into the room and plopped them on Gregg's desk, then walked to the ubiquitous television and reached for the switch.

"Leave it on, Irv," Lilly said.

Krupp raised his eyebrows disdainfully and left.

"Something really ought to be done about that boy's attitude," Gregg muttered, picking up the top folder. He opened it, and returned his gaze to the screen. He'd had the habit of working and watching TV simultaneously since grade school.

And what was wrong with the habit? Nothing, really, he decided. Most of his contemporaries had it. It might slow the work down just a smidgen, but in his own case, at least, the habit was really a necessity. He wasn't merely watching TV—he was keeping his finger on the national pulse. And that, surely, was expected of the head of the Cleveland chapter of Americans Against Age Discrimination.

The show was "Diggers!": a drama supposed to be based on actual cases of the Department of Inter-Generational Relations. Gregg sometimes wondered. It seemed like every other week the Diggers! were involved in an attack on a geriatric center by a group of under-70s, and this was one of those weeks. This time the twist was that the baddies were led by a young Army captain who had burst past the guards and into the lobby of the gerry center with his tank.

The files Krupp had brought him were skimpy. Ben Purley was a 71-year-old sociologist educated at Heidelberg and West Texas State and he'd joined 3AD four months ago. Another sheet of paper said he'd worked for Holt Pharmaceuticals and the government, and that he'd also published a textbook—*Introduction to the Creation of Self-Fulfilling Prophecies*. Nothing there Gregg hadn't already heard.

The Digger! operative, a youngster who'd disguised himself as a malcontent by rubbing his face with dirt, had worked his way into the room in the center where the baddies were headquartered. There were no innocent aged in the room, so the hero directed Digger! artillery fire on his own position.

The file on Roy Wickes, aged 72, held even less information, since he'd worked for one of the secret life-extension research centers out west. It was impossible to get any information on him that he didn't choose to give himself, and what that amounted to was that he was a biologist. He'd joined the same day as Purley.

After the young Digger! had been blown to smithereens, the aged regular of the show wept over his scraps and made an impassioned speech explaining how such tragedies would never come to pass if everyone supported the government. It was quite moving.

Before the regular was finished Roy Wickes walked in and snapped him off, scowling. Purley followed close behind. Gregg tried to think of a time when he hadn't seen them together, and failed.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"You wanted to see us?" Wickes asked.

"That's right," Gregg said. He waved at a couple chairs in front of his desk and they sat.

He studied the two carefully. Dr. Purley, smooth and bland, slouched in his seat and smiled a nothing smile at a point somewhere above Gregg's head. Dr. Wickes, tall and patrician with gleaming white hair, sat at attention and glowered. They weren't mismatched, though. They complimented each other like some old married couple: two old Ph.D.s who between them had all the answers. And, like almost all the grey and wrinkled, they exuded an aura of power and wisdom and beauty. Gregg had to fight against awe.

Finally he said, "I was wondering if you could help me. You're probably aware that a disproportionately high number of key people have been dropping out of 3AD . . ." he tailed off, expecting an answer.

"Disproportionate to what?" Wickes finally asked.

"Uh—to the usual rate of dropouts."

"You must excuse my pedantic friend," Purley said, his smile widening. "The fact is, though, we haven't noticed any change in the rate of dropouts since we joined."

Gregg blushed. "That was poorly put," he said. "You wouldn't have noticed it, since the rate just happened to increase at the same time you joined up."

"Are you suggesting that the fact that we're old offends some people?" Wickes asked.

"No," Lilly said hastily. "I'm sure it's not that at all. In fact, we'd been longing for some over-70s to join. Makes us look good. Still . . . you joined and they started dropping out. There must a connection somewhere. And I've been wondering—why would two such as you be joining Americans Against Age Discrimination anyway?"

"Is there any good reason why a person in his Golden Years can't recognize the justice of a cause—can't want to work for it?" Wickes said, answering a question with a question yet again. "After all, we had to go through the same things you youngsters are going through now. Fifty percent taxation. Constant snubbing. Remember the riots of '47? We were in the front lines, nose-to-nose with the police."

Gregg stared at them wide-eyed. Had these two really been in on that actual assault of a geriatric center thirteen years ago? That would have made them fifty-eight and fifty-nine at the time. They were so distinguished-looking it was hard to imagine.

Drs. Purley and Wickes seemed too good to be true. On the other hand, if they were truly what they said they were it would be insane to kick them out of 3AD. The best course was to keep them where they could be watched, and if they turned out to be for real, so much the better.

Couldn't let them know which way his mind was running, though.

"I'm not sure," he said, "that you fellows really understand the way things are *now*, more than a decade after your retirements. I mean, during the riots the over-70 population was still only forty percent. Youth still had a few representatives in Congress. Now it's forty-five percent and the over-60s are in the ma-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

jority. The K-Tel Party can't win an election for dogcatcher. The Ronco Party will win *this* election more solidly than ever, unless we can wake people up. And when Ronco claims a mandate our taxes will go up to sixty percent —mark my words. Those life-extension centers swarm over money like flies on crap."

Wickes leaned back in his chair and, with an elaborate show of boredom complete with yawning and stretching, he rested his feet on the edge of Lilly's desk.

"We read the papers, sonny," he said. "That's why we're here. We've got ideas—some methods that might help you. We've got thirty more years of knowledge than you—this business about the superiority of old people isn't total nonsense, you know. . . ."

"Sure it is," Gregg interrupted. "It's been scientifically established that people learn less and less as they age."

"If I remember correctly," Wickes said, "that was established by scientists who hadn't even reached age fifty yet."

"Besides," added Purley, "that's because most people stop trying to learn. We're different. And even those who do slow down have learned something. Plus, there's a certain—well, *maturity* that comes to a man who's lived seventy years. He's improved, like a fine wine."

"I think I've heard that one before," Gregg said.

"Listen," said Wickes, "if you don't want our help, to hell with you."

"I didn't say that. We welcome everyone's help."

"Good," Purley said. "I'm glad that's settled. Now, what we'd like to do is talk to some of your people in the Taxpayer's Liberation Army."

Lilly felt his face go white. How the hell did they know about 3AD's connection with the TLA? God! These guys might even be government agents!

"I don't know where you got your ideas about this so-called association," Lilly said, "but we're completely law-abiding. There's no connection between the two groups."

Purley and Wickes looked at each other. They smiled.

"What are you going to do," Wickes asked, "after we lose the election next month? Things are only going to get worse. Are you just going to sit back and take it until they bleed you to death?"

"Taking that attitude towards the election guarantees disaster," Lilly said. "We shouldn't even be thinking about other strategies until after the results are in."

The two old men smiled at each other again. It infuriated Lilly, but he kept his mouth clamped shut.

"It's O.K.," said Purley, "if you want us to do busywork for you for the next month. Of course, we'll go on with our own plans, too."

"Which are . . . ?"

"Perhaps we should wait until the returns are in to discuss that."

Only a few were authorized to know that 3AD's activities weren't entirely legal; the world was full of people who weren't. For this reason Gregg kept his contacts with Ruth Baer, head of the TLA, down to once or twice a month, and when he went, he skulked. He couldn't help himself. The thought of

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

all those millions of unsanctioned eyes made his body try to become smaller. His shoulders hunched, his neck pulled in, and his legs stooped and scuttled.

This time he scuttled to the local Geriatric Center under the guise of paying a visit to Old Man Baer, who was, incidentally, an assistant undersecretary of state in charge of northwestern Far East relations.

The lady at the desk gawked at him and called upstairs to ask Ruth if he were all right before she let him through.

The Old Man was canned. A hundred and fourteen years of drugs, cigarettes, booze, and total lack of exercise had rotted away so much of his body that the Life Extension people had put his brain and spinal cord in one of the new, mass-produced wheeled metal units.

At least, Lilly thought while staring at him and exchanging pleasantries with Ruth, that was the story. Sometimes he wondered whether the old man might not actually be dead. The Establishment could be issuing robots under the names of croakers, to keep their voting totals up.

From what Lilly had seen of Mr. Baer, they wouldn't have had to make it a very complicated robot, either. The only words he'd ever heard out of the can were a tinny "Good morning, Gregg, good morning, Ruth," and "I think the end of the crisis in the northwestern Far East is finally in sight," both with about equal regularity.

This morning Gregg didn't even get that. The Old Man was plugged into the computer terminal—the only furniture in his little room and all that was needed. He was immobile and, as far as Gregg and Ruth were concerned, deaf and dumb.

Ruth made Gregg uncomfortable. She was fifty-one—one of the oldest 3AD people—but she was cursed with raven hair and smooth, taut skin that simply refused to wrinkle, no matter what beauty preparations she tried. Gregg tried to ignore the fact that she was so irremediably unattractive, but her bad luck had made her bitter and her voice had turned into a taut, high-pitched whine that matched her flesh. Gregg always flinched when she began to speak.

"You arranged this visit a little early, didn't you, Gregg? I thought we were going to play it cool until after the elections."

"Something came up," Gregg said. "There are a couple new guys, joined a few months ago—Wickes and Purley. Have you met them?"

"Yes."

"I thought you might have. From what I've seen in our fund-drive meetings they seem to have a talent for picking out Taxpayer Lib people. Not exclusively, but they do like to talk with the most extreme—those who're unhappiest with their lot."

"So what worries you about them? We soreheads have always tended to stick together."

"Well—they're recipients now, instead of taxpayers. Wouldn't that tend to make you a little less sore? I'm afraid they might be agents provacateur or something."

Ruth smiled pityingly. "I can assure you," she said, "they're not."

"What have you found out? I knew

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

there was something fishy about those two . . ."

"Why?" Ruth interrupted. "Because they're old? I'm not so young myself, you know. In nine more years I'll be on the other side of sixty. You're guilty of age discrimination yourself!"

"I'm sorry, Ruth . . ."

"They didn't create this situation," Ruth went on. "It's *his* generation that's responsible!" She flung her pointed finger toward the can by the console.

"Now, Ruth . . ."

"Those goddam post-World War II baby-boom leeches. You might not have a feel for it—you're two or three generations removed—but the old man had me late in life. My own father's one of them, and I *know* them. The luckiest goddam generation in history. You might not believe it, but sixty years ago, I'd have been considered beautiful . . ."

"You're not making any sense, Ruth."

Ruth caught her breath, calmed down, nodded. "You think that's a non-sequitur. Let me explain. One of the reasons so many babies were born at that time was that *their* parents were a generation that had gone slightly nuts on the subject of babies. Have you ever heard of Dr. Spock?"

"Star Trek?"

"No. Never mind. Just take my word for it that they were pampered as babies have never been pampered before. And when they reached adolescence they were given so much money, the whole of society became oriented towards adolescence. When that asshole in the can was young, age was ugly. And when they started to get old, around the turn of the century, there were so many of them they were able to vote in the present system of sucking the country dry to extend their miserable lives. So they accumulated more wealth and power than ever. Wealth and power are, in themselves, attractive, and they used every sleazy Madison Avenue trick they knew to reinforce that, so now, when they're old, youth is ugly. They've been God's darlings for more than a century."

"O.K. So you don't like them. Me neither. So what?"

Ruth sighed and shook her head. "One of the points is that anybody under 100 is of a different generation, and there's no reason why you shouldn't trust them."

"O.K., but there's no reason why I should, either. Do you know what Purley and Wickes are up to or not?"

"I think so."

"What is it?"

"I don't want to say till I'm sure. If it's what I think, it's nothing for you to worry about. On the contrary, it might be just the kind of deal we've been looking for."

"Are you aware that fifteen of the guys those two have talked to have disappeared? Four of them were pretty important to the TLA. This is supposed to be harmless?"

"Harmless to us. Look, you're not going to get anything more out of me right now—I could be wrong, and I'm not going to embarrass myself. Just hang loose. We've got more important things to worry about, don't we?"

The election-night party (after all, Gregg thought, a wake *is* still a party, isn't it?) took place in the lobby of the Clarendon Hotel, where many 3AD

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

members lived. The Clarendon was over a century old and had never had any pretensions from the day the underpaid architect hurriedly conceived it. It was obviously built for old men to wait to die in. Now young men waited to grow old in it. The lobby was full of them, sucking bottles of rice beer, staring at the TV—most of them with open-mouthed horror.

Gregg had been on the streets all day, getting out his pathetic little vote, and hadn't eaten, so he purchased a bowl of soy glup from a vending machine and walked around the lobby, thanking people for their help and shoveling the glup in at the same time. He worked his way up toward the screen, worrying about the number of key people who seemed to be missing.

The fifteen who'd disappeared before he visited Ruth had been just a hint of the beginning. In the three weeks since then, over forty key people had disappeared, most of them also members of the TLA. And tonight he counted two more.

Gregg spotted Purley and Wickes in the best seats in the house—the couch right in front of the grimy TV screen. He walked behind them, quietly, and eavesdropped.

A head on the TV was announcing that Cyclops Surveys had determined through analysis of the garbage of Fried, North Dakota (pop. 16), that the Ronco Party would win by a landslide. Wickes sat hunched forward, eyes boring into the screen.

"What if they're wrong, Benjamin?" he asked.

"You're a worrier, Roy," Purley said in a rich, syrupy voice. "They're never wrong."

"They were wrong in '24."

"That was thirty-six years ago. Garbage analysis was a much cruder science then, and computers not nearly as sophisticated."

Lilly wasn't sure, but it sounded a whole lot like Wickes and Purley *wanted* the oldsters to win. He was about to pounce when he remembered that many TLA people felt the same way. The more oppressive the government, the easier it was to promote revolution—that was the rationale.

Wickes must have been getting that prickling around the back of the neck that sometimes comes with being watched, for he glanced behind him nervously, then rose and made a formal bow.

"Mr. Lilly," he said. "A pleasure. Won't you join us?"

Lilly hid his startlement well, he thought. He shook Wickes's hand with his free one, lifted the top off a cannister ashtray and plopped his empty bowl inside, then worked his way around to the couch and squeezed in next to Purley, who grinned and said, "Hi, boss. You're just the person we've been wanting to talk to. You might have noticed . . ."

"Not now!" Wickes commanded, pointing at the screen.

A lectern decorated in pink, grey, and aquamarine had popped on the murky TV. A 110-year-old man hobbled up to it—the oldest president-elect in history. The announcer reminded the audience that this record had been reset with every new president since 2024, then shut up as the ancient began to speak.

He gave a short, snappy address. He

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

began by reminiscing. When he was a boy, he said, it was often observed by the wise men of the time that, while his country had grown great in the uses of science and technology, they were still as children when it came to the social sciences, religion, and ethics. There were horror stories he could tell about the treatment of the aged in those days—but no, this was not the time to dwell on the uglinesses of the past, but the glory of the present and future. That immaturity in the social area was now, thank God, at an end. As the average age of the citizen increased, the society itself matured. America had improved, you might say, like a fine wine.

This maturity, he implied, made deep thinkers of us all. The people could rest assured that any new programs their government initiated would be well thought out. He mentioned two such programs. Without explaining how, he announced that the Mexican Incursion would be stopped at Tucson. Without explaining how, he announced that the geriatric centers would be expanded and that life-extension research would be stepped up yet again.

He didn't have to explain. All over the room, people instinctively clutched the places they kept their money.

"Sixty percent!" a voice in the back moaned.

"Where do you move to when you can't afford the Clarendon?" groaned another.

Those complaints were the beginning of a chorus. Then the moans changed to angry yells. Things might have got out of hand if the speech hadn't ended and an advertisement replaced it, featuring Arachne.

The mostly male audience turned dead quiet.

Arachne had the same effect on everyone, Gregg included. He began to pant. His heart raced. He became acutely aware of his groin. The ad was for some perfume or other—he didn't notice or care. Even behind that filthy glass her beauty shone through: those sensuous, flopping, pendulous breasts; that gorgeous hair, like a frizzy silver nimbus; those drooping, finely wrinkled jowls . . .

When her sixty seconds were up, every man in the lobby was lost in a dream accompanied by a slight headache.

Gregg was brought gently back to reality by Purley's melodious voice.

"Huh?" Gregg asked.

"I said Mr. Wickes knows Arachne, personally. Roy is quite a sex object himself, the ladies tell me." He grinned.

Wickes self-consciously combed his long silver hair with his fingers. "I must say, Ben," he said, "you made me feel like a name-dropper, and I haven't even opened my mouth."

"What's she like?" Gregg asked eagerly.

"Mr. Lilly! That's hardly any of your business!"

"I didn't mean *that*," Gregg put in hastily. "I mean, what's she like as a person?"

"She's a sweet, quiet, intelligent girl."

"She's more than that," said Purley. "In fact, that relates to our, uh, project . . ."

"Well, yes, she is different," Wickes admitted. "I'm not sure if we . . ."

"I have a suggestion," said Purley,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

rising. "I think, in addition to Arachne, you had something you wanted to talk to us about. Am I right?"

"Yes," said Gregg.

"And we wanted to talk to you, too, in private. This isn't a very private place, but I'm sure we can find a secluded spot in the bar."

"I'm afraid," Lilly said, "that I'm going to have to stay here with the troops. It's expected of me."

"We'll buy, of course," added Wickes. "We're flush."

The bar was one of the Clarendon's quaintest eyesores—a sad brown place where the few patrons were also clustered around the TV, as if watching the news could make a difference. Lilly led the old men instinctively toward the back, so everyone would be staring away from them.

When they all had tumblers of liquor in front of them Purley said, "Have you seen Ruth around tonight?"

With a shock, Gregg realized he hadn't. At such affairs she usually held court in some corner, surrounded by extremists. He'd assumed she was doing that tonight, but come to think of it . . . If she was gone, that made three that day.

Purley sized up the expression on Gregg's face, and nodded. "I doubt that you'll see her again in 3AD," he said, "unless it's by accident. And if you do see her, I doubt that you'll recognize her."

Purley and Wickes beamed at each other.

"You seem to be awfully damn proud of whatever it is you're doing," Gregg said tartly. "What is it? How do you think you can help us by taking away our most active people?"

"That's what we're about to explain," said Wickes. "But before we do, I'd like to point out that 3AD might very well have fallen apart anyway. Your most active people are the most fed up, and after losing this election to the Roncos, they'd have gone in for violent revolutionary activity. Am I right?"

Gregg reflected momentarily on the fact that he'd planned to go in for it himself, then said, "O.K., so we wouldn't have been as legal as we are now. That doesn't mean . . ."

"So you'd have been split," Purley interrupted, "and consequently weakened. Such is the fate of all small reformist groups. You've got to face the fact that there's no escape—our society will keep on going in the direction it's going in spite of all you can do, until it crumbles from its own internal weaknesses—from having an overabundance of old chiefs and a dearth of young Indians, for instance. Indeed, if your little successes do anything, they prolong its life. The best any revolutionary can hope for is to speed up that natural process."

"That," Wickes added pompously, "is the essence of our scheme."

"Sure," said Gregg, scowling. "The way to bust up the Roncos is to be a good Ronco."

"You're not being fair, Lilly," Purley said. "Why not hear us out before you judge. Do you really think Ruth Baer, of all people, would have gone along with us if we didn't have something pretty good to offer?"

"O.K. Spit it out."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Purley nodded. "Roy Wickes," he said, "used to work in the Tacoma Geriatric Research Institute before he retired—you know, the big one?"

"Uh-huh."

"I liberated," Wickes said, "a large amount of XF-47b."

"Means nothing to me," Gregg said.

"It shouldn't," Wickes said. "It's a secret."

"Does any of this really have anything to do with Arachne?" Gregg asked sharply.

"Of course," said Purley.

Wickes put on a stern face and said, "I don't know if Mr. Lilly can be trusted with such information."

Gregg knew he was being led on —manipulated like a puppet—and he didn't care. The thought of Arachne had kicked his gonads into overdrive, making him wild to find out whatever her secret was. He pleaded, knowing he was doing just what was expected of him.

"Arachne," Wickes said at last, "is twenty-eight years old."

"What?"

"You heard me. She's been treated with XF-47b. Have you never noticed that, in spite of that great body, that old person's élan, she still speaks the language of the young?"

"So XF-47b is a sort of beauty treatment?"

"It's much more than that," Wickes said.

"Look," Purley said. "Here's the scheme. We've got a buddy in the Hall of Records. We can get you a birth certificate stating you were born seventy years ago and we can get your computerized records altered to match. Overnight, you can be switched from the giving end to the receiving end of this society. Are you interested?"

"I'll have to admit it sounds very attractive," Gregg said, "but it seems to me all you're really selling is your contact in the Hall of Records. I could make myself up to look old."

Wickes shook his head and said, "There was a drug discovered about a decade ago and since suppressed by the government which did much more than makeup. It reduced the elasticity of the reticular layer at the junction of the dermis and epidermis to nearly nothing. It was, in fact, the beauty treatment everybody promises and nobody delivers. The wrinkles were real and permanent, and the people were using the drug in a scheme much like this one. Every one of them was caught, though—when they were processed through the geriatric centers. It was obvious to the doctors that they weren't really old. There's too much difference, internally, between . . ."

"When you finish the treatment with XF-47b," Purley interrupted eagerly, "you'll *really be old!*"

Greg was skeptical. "How do you mean that?" he asked.

"I mean that within the six months it takes the drug to run its course you'll experience muscle atrophy . . ."

"Do you mean it!" Gregg gasped. His heart began to race.

". . . a drop in certain trace elements such as aluminum, leading to a slower, more stately pace of brain function . . ."

"My God! You do mean it! This is wonderful!"

". . . wrinkling and greying, of course, and an accumulation of minute

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

lesions in the eye and ear, and arteriosclerosis . . .''

''If all this is true,'' Gregg said, waving Purley at last to a stop, ''you've sold me. But it's hard to believe. How does it work?''

''That's complicated,'' said Wickes, ''but to give you an idea—you know there's a theory of aging that says your DNA handles the process? That we each have a 'biological clock'?''

''Yes.''

''It turns out to be correct. We proved it at the Tacoma Institute. Unfortunately, that knowledge doesn't do the aged a bit of good. Once a body has decided it's time for, say, *o. deformans*, you can't use recombinant DNA technology to turn the body around and straighten the bones out. The harm's already been done.

''The administrators never could tell the difference between science and magic, though—that damned 'biological clock' metaphor only confused them. They instructed us to find a way to set the clock going backwards. We failed, of course, but while we were working on it we *did* discover a way to make it go forward a lot faster. It's always easier working with entropy than against it. That's XF-47b.''

It was too much for Gregg. A bright white light went off in his head. To pretend to be old was one thing; to be really old was an answer to his most desperate prayers.

When he came back to Earth, Purley was saying, ''. . . down through Appalachia and we'll have gone through the country one circuit. Plus, there are others like us. I'd say it all adds up to about a quarter million extra souls a year being added to the old age rolls. We're definitely weighing the system down. . . .''

Gregg took a deep breath and tried to suppress his enthusiasm. ''What's the catch?'' he asked.

''No catch,'' Purley said. ''Well . . . it will cost you two thousand dollars, but considering what it is we're providing, that's practically a giveaway, wouldn't you say?''

Gregg thought about it. Free food, free housing, free medicine for life. And more important, people would listen to him when he opened his mouth. He'd have respect, and a chance for real power—a chance to actually make a difference. It was well worth it.

''The two thousand,'' Wickes added, ''gives us only a very small profit. The cost is eighteen hundred.''

''It's a bargain,'' Gregg admitted. ''But unfortunately I don't have two thousand.''

''Nonsense. Surely someone in your position can raise the money.''

He could. By filching 3AD funds. It was a horrible idea.

''We can have your new papers and a four-month supply of pills ready for you in two days. About the time you finish up the pills you'll begin to notice the change, and you'll be a full-fledged old man in six months. Thirty-five years in six months—that's really something, isn't it? Anyway, you'd better prepare yourself a place to hide pretty quick. You'll have to be ready by the time the change begins to show. . . .''

''Make it three days,'' Gregg said.

Four months later Gregg came to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

terms with his new situation. It happened in a series of flashes one day.

The first flash came when he was walking down the sidewalk to his labor-pool job (lifting crates of rotting fish on their way to becoming FPC) and noticed Irv Krupp, his old secretary, coming the other way.

He knew they were in the same boat—Irv had disappeared two days before he had—and often he'd gone over the scene in his mind: what he'd do when he met an artificially aged compadre. They'd greet each other enthusiastically, giggle at the joke they'd played on the Establishment, have a few drinks.

Instead, he found himself literally fleeing to the other side of the street. He knocked a stoop-shouldered young lady over on the way.

He burrowed into a thick crowd watching a fistfight and didn't come out until he'd made sure Irv had passed around a corner.

He was so humiliated he gave up on the fish and returned to the labor pool barracks, where he lay on his bunk and had his next two flashes.

The barracks were his hideaway. They were safe because the personnel were so transient. No one stayed there long enough to notice a change in him, he figured—and he changed bunks himself every few days, for safety's sake.

It was truly squalid. The authorities doled out enough soy glup and FPC to keep the youngsters alive, but that was all. The bunks were free of bedbugs, but they were dirty enough to support cockroaches. Gregg had long ago given up trying to kill them. He just flicked them on to other people's cots. He divided his time between seeing how finely he could control his range and looking at his reflection in the nearby window.

He did look several years older. The oppressiveness of his hideout and the grinding repetitiveness of his work had made that possible, lining his face and changing his posture to a stoop.

He sighed and flipped a roach especially hard, shooting it to the ceiling.

The little green pills had run out last week. He'd taken every one, clinging to hope. Now, judging by his reaction to Irv Krupp, hope was gone. He was only getting older a day at a time.

He'd been conned.

The whole leadership of 3AD had been conned. It was almost pretty, how they'd been taken. They'd been impressed by the two oldsters' degrees; by their erudition, of course; but mostly they'd been taken in by their age and the aura of their age—the very thing 3AD was supposed to be working against and should have been immune to.

That business about hastening the end by increasing the number of aged getting government aid—that was very clever. If the pills had been real, it might even have worked in thirty years or so. But whether it was a good reason or not, it now sounded like what it really was: a flimsy justification for doing what they wanted to do anyway.

So 3AD is dead, he realized. The promise of age was a lure no one could resist, and the public at large would understand that—they would understand it, but they wouldn't sympathize. If the truth ever came out, 3AD would be mercilessly mocked.

Purley and Wickes had accomplished

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a lot. Not only had they made a pile of money, but they'd insured themselves against ever being reported by running their game on 3AD. No one would ever tell. If Irv had noticed him first, instead of the other way around, Gregg was sure he'd have run, too. It was just too humiliating.

Gregg pounded the skinny mattress in impotent fury.

At the headquarters of the Department of Inter-Generational Relations (affectionately called "the diggers" by the grateful citizens) Roy Wickes and Ben Purley walked into the office of their immediate supervisor and took seats. Purley puffed and groaned. Wickes ran a hand nervously through his hair.

"You're getting fatter every day, Purley," his boss said. "Time you got out into the field again."

Purley heaved himself straight in his chair. "What?" he asked. "Must I wear all that makeup again? I think I was breathing it—that powder was getting into my lungs." He wheezed pathetically.

"Nevertheless," the boss said, "the time for more field work is approaching. The Cleveland monitor has turned in its last report and been called off. All 3AD-type activity there has stopped and shows no signs of reviving. And you were right about how those troublemakers would react—there's not even a hint of a rumor of what really happened. There are strong indications that you two have come up with the most efficient way of busting up these groups we've ever hit on."

"Strong indications!" Wickes's face flushed with anger. "Seems to me our case has been proved. Everything worked the way we said . . ."

"And the government's been spared the expense and publicity of a trial," Purley added. "No fuss, no martyrs. Now where's our XF-47b?"

"You know the rules," the boss said. "The drug is a reward only for—and I quote—'work that is truly outstanding.' If we gave it out for every little success, we'd have to start worrying about the problems you outlined to Lilly and his group. Besides . . ."

"What the hell more do you want!" Wickes yelled.

"Look," the boss said. "Personally, I believe you two are geniuses. But *my* superiors are a little harder to convince. They say they've seen only one test case, and they want to see more. You got leads to 3AD-type groups in other cities while you were in Cleveland and they want you to follow up. Also they point out that what happened in Cleveland wasn't all your own work. If Undersecretary Baer hadn't unplugged from his computer and overheard one of their meetings and reported it to us, you'd never have known where to go."

"More field work," Purley grumbled between clenched teeth.

"You'd have to lose some weight anyway," the boss said, "before we could begin aging you."

"And how long," Wickes asked, "are we going to have to do this before we've proven that we're worthy?"

"For that matter," Purley added, "how do we know that there really *is* such a thing as XF-47b?"

The boss spun on his wheels, buzzing with outrage.

"Would we lie to you?" he asked. ■

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Gary Freeman

Vernor Vinge

GEMSTONE

Things are seldom what they seem. This story, for instance. . . .

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The summer of 1957 should have been Sanda's most wonderful vacation. She had known about her parents' plans since March, and all through the La Jolla springtime, all through the tedious spring semester of her seventh grade, she had that summer to dream about.

Nothing ever seemed so fair at first, and turned out so vile:

Sanda sat on the bedroom balcony of her grandmother's house and looked out into the gloom and the rain. The pine trees along the street were great dark shadows, swaying and talking in the dusk. A hundred yards away, toward downtown Eureka, the light of a single street lamp found its way through pines to make tiny glittering reflections off the slick street. As every night these last four weeks, the wind seemed stronger when the daylight departed. She hunched down in her oversized jacket and let the driven mist wash at the tears that trickled down her face. Tonight had been the end, just the end. Daddy and Mom would be here in six days, and two or three days after that the three of them would drive back home. Six days. Sanda unclenched her jaws and tried to relax her face. How could she last? She would have to see Grandma at least for meals, at least to help around the house. And every time she saw Grandma she would feel the shame and know that she had ruined things.

And it isn't all my fault! Grandmother had her secrets, her smugness, her ignorance—flaws Sanda had never imagined during those short visits of years passed.

In the hallway beyond the bedroom, the Gemstone was at it again. Sanda felt a wave of cold wash over her. For a moment the dark around her and the balcony beneath her knees were not merely chill and wet, but glacially frozen, the center of a lifeless and friendless waste. It was funny that now that she *knew* the house was haunted and *knew* precisely the thing that caused these moods, it was not nearly as frightening as before. In fact, it was scarcely more than an inconvenience compared to the *people* problems she had.

It had not always been this way. Sanda thought back to the beginning of the summer, trying to imagine blue skies and warm sun. Those first few days had been like the other times she remembered in Eureka. Grandmother's house sat near the end of its street, surrounded by pines. The only other trees were a pair of small palms right before the front steps. (These needed constant attention. Grandma liked to say that she kept them here just so her visitors from San Diego would never feel homesick.) The house had two storeys, with turrets and dormers coming out of the attic. Against the blue, cloudless sky it looked like a fairy-tale castle. The Victorian gingerbread had been carefully maintained through the years, and in its present incarnation gleamed green and gold.

Her parents had left for San Francisco after a one-day stay. The summer conference at USF was starting that week, and they weren't yet sure they had an apartment. Sanda's first night alone with Grandma had been everything she imagined. Even though the evening beyond the porch was turning chill, the living room still held its warmth. Grandma set her old electric heater in the middle of the carpeted floor so that it shone on the sofa side of the room.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Then she walked around the book-lined walls pretending to search for the thing she so liked to show her grandchild.

"Not here, not here. Oh my, I hardly ever look at it nowadays. I forget where . . ." Sanda tagged along, noticing titles where her earlier, younger self had been impressed only by color and size. Grandma had a complete collection of *National Geographics*. Where most families put such magazines in boxes and forget them, Grandmother had every issue there, as though they were some grand encyclopedia. And for Sanda, they were. On her last visit she had spent many an afternoon looking through the pictures. It was the only item she remembered for sure from this library. Now she saw dozens of books on polar exploration, meteorology, biology. Grandfather Beauchamp had been a great man, and Grandmother kept the library and its books, plaques, and certificates in honor of his memory.

"Ah, here it is!" She pulled the huge notebook down from its central position. She led Sanda back to the sofa. "Too big to sit in my lap, now, aren't you?" They grinned at each other and she opened the book across their laps, then put her arm across Sanda's shoulders.

The book was precisely organized. Every newspaper clipping, photo, article, was framed and had a short legend. Some of the pictures existed nowhere else in the world. Others could be found in articles in magazines like the *National Geographic* from the '20s and '30s. Rex Beauchamp had been on the "Terra Nova" expedition in 1910. If it hadn't been for a knee injury he would actually have been on Scott's tragic journey to the South Pole. Sanda sucked in her breath and asked the same question she had asked once before, "And so if his knee had been okay, why, he would have died with the others—and would never have met you, and you would never have had Dad, and—"

Grandma slapped the notebook. "No. I know Rex. He would have made the difference. If they had just waited for him to get well, they could have made it back to the coast."

It was an answer she had heard before, but one she wanted to hear again. Sanda sat back and waited for the rest of the story. After World War I, the Beauchamps had emigrated from Great Britain, and Grandfather participated in several American expeditions. There were dozens of pictures of him on shipboard and in the brave little camps the explorers had established along the Antarctic coast. Rex Beauchamp had been very handsome and boyish even in middle age, and it made Sanda proud to see him in those pictures—though he was rarely the center of attention. He always seemed to be in the background, or in the third row of the group portraits. Grandma said he was a doer and not a talker. He never had a college degree and so had to serve in technician and support jobs. But they depended on him nevertheless.

Not all the pictures were of ice and snow. Many of the expeditions had worked out of Christchurch, New Zealand. On one occasion, Grandmother had gone along that far. It had been a wonderful vacation for her. She had pictures of the city and its wide, circular harbor, and others of her visiting the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

North Island and Maori country with Grandfather.

Sanda raised her eyes from the picture collection as her grandmother spoke. There were things in this room that illustrated her story more spectacularly than any photographs. The area around the sofa was brightly lit by one of the beautiful stained-glass lamps that Grandma had in every room. But at the limits of its light, the room glowed in mysterious blue and red and yellow from the higher panes in the glass. Dark polished wood edged the carpet and the moldings of every doorway. Beyond the electric heater she could see the Maori statues the Beauchamps had brought back from their stay at Rotorua. In normal light those figures carved in wooden relief seemed faintly comical, their pointed tongues stuck out like weapons, their hands held claw-like. But in the colored dimness the mother-of-pearl in their eyes shone almost knowingly, and the extended tongues were no childish aggression. Sanda wriggled with a moment of delicious fright. The Maori were all civilized now, Grandmother said, but they had been more hideously ferocious than any savages on Earth.

"Do you still have the *meri*, Grandma?"

"Yes indeed." She reached into the embroidered sewing stand that sat next to her end of the sofa and withdrew a graceful, eight-inch piece of stone. One end fit the hand, while the other spread out in a smooth, blunt-edged oval. It was beautiful, and no one but someone like Grandma—or a Maori—could know its true purpose. "This is what they fought with, not like American Indians with spears and arrows." She handed it to Sanda, who ran her fingers over the smoothness. "It's so short you have to come right up to your enemy and *whack!* right across the forehead." Sanda tried to imagine but couldn't. Grandma had so many beautiful things. Sanda had once overheard her mother complain to Daddy that these were thefts from an ancient heritage. Sanda couldn't see why; she was sure that Grandpa had paid for these things. And if he hadn't brought them back to Eureka, so many fewer people could have admired them.

Grandma talked on, well past Sanda's La Jolla bedtime. The girl found herself half hypnotized by the multicolored shadows of the lamp and the pale red from the heater. That heater sat on newspapers.

Sanda felt herself come wide awake. "That heater, Grandma. Isn't it dangerous?"

The woman stopped in mid-reminiscence. "What? No, I've had it for years. And I'm careful not to set it on the carpet where it might stain."

"But those newspapers. They're brown, almost burned."

Grandma looked at the heater. "My, you're a big girl now, to worry about such things. I don't know. . . . Anyway, we can turn it off now. You should be going to bed, don't you think?"

Sanda was to sleep in the same room her father had used when he was little. It was on the second floor. As they walked down the hall to the bedroom, Grandma stopped by the heavy terrarium she kept there. Dad and Mother hadn't known quite what to make of it: the glass box was something new. Grandma had placed it so the wide sky-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

light gave it sun through most of the day. Now moonlight washed over the glass and the stones. Pale reflections came off some of the smaller rocks. Grandma switched on the hall light and turned everything mundane. The terrarium was empty of life. There was nothing there but rocks of odd sizes mixed with river-washed gravel. It was like the box Sanda kept her pet lizards in. But there were not even lizards in this one. The only concessions to life were little plastic flowers, "planted" here and there in the landscape.

Grandma smiled wanly. "I think your Dad believes I'm crazy to put something like this here."

Sanda looked at the strange display for a moment and then suggested, "Maybe if you used real flowers?"

The old woman shook her head. "I like artificial ones. You don't have to water them. They never fade or die. They are always beautiful." She paused and Sanda remained diplomatically silent. "Anyway, it's the rocks that are the important thing here. I showed you pictures of those valleys your grandfather helped discover: the ones that don't have any snow in them, even though they're hundreds of miles inside Antarctica. These rocks are from one of those valleys. They must have been sitting there for thousands of years with nothing but the wind to upset them. Rex kept his collection in boxes down in the basement, but I think they are so much nicer up here. This is a little like what they had before."

Sanda looked into the cabinet with new interest. Some of the stones were strange. A couple looked like the meteorites she had seen in the Natural History Museum back home. And there was another, about the size of her head, that had a vaguely regular pattern in the gray and black minerals that were its substance.

Minutes later, Sanda was tucked into her father's old bed, the lights were out, and Grandmother was descending the stairs. Moonlight spread silver on the window sills, and the pines beyond were soft, pale, bright. Sanda sighed and smiled. So far, things were just as she dreamed and just as she remembered.

The last she wondered as she drifted off to sleep was why Grandmother put flowers in the terrarium if she really wanted to imitate the bleak antarctic valleys.

That first day was really the last when everything went totally well. And looking back on it, Sanda could see symptoms of many of the things that were later to make the summer so unpleasant.

Physically everything was just as she remembered. The stair railings were a rich, deeply polished wood that she hardly ever saw in La Jolla. Everywhere was carpeting, even on the stairs. The basement was cool and damp and filled with all the mysterious things that Grandfather had worked with. But there were so many things that Grandma did and believed that were *wrong*. Some —like the flowers—were differences of opinion that Sanda could keep her mouth shut about. Others—like Grandma's use of the old electric heater—were really dangerous. When she spoke about those, Grandmother didn't seem to believe or understand her. The older woman would smile and tell her what a big girl she was getting

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to be, but it was clear she was a little hurt by the suggestions, no matter how diplomatically put. Finally Sanda had taken a plastic mat off the back porch and slipped it under the heater in place of the newspapers. But Grandma noticed, and furthermore pointed out that the dirty mat had stained the beautiful carpet—just the thing the nice clean newspapers had been there to prevent. Sanda had been crushed: she'd been harmful when she wanted to be helpful. Grandmother was very good about it; in the end—after she cleaned the carpet—she suggested putting the mat between the newspapers and the heater. So the incident ended happily, after all.

But this sort of thing seemed to happen all the time: Sanda trying to do something different, some hurt being caused property or Grandma, and then sincere apology and reconciliation. Sanda began to feel a little haggard, and to watch the calendar for a different reason than before. Just being with Grandma had been one of the big attractions of this summer. Both she and Grandma were *trying*, but it wasn't working. Sometimes Sanda thought that—no matter how often Grandma said Sanda was a young grown-up now—she still thought Sanda was five years old. She had seriously wanted Sanda to take afternoon naps. Only when the girl assured her that her parents no longer required naps did she relent. And Grandma never told her to do anything. She always asked Sanda "wouldn't you like to" do whatever she wanted. It was awfully hard to smile and say "oh yes, that would be fun" when in fact it was a chore she would rather pass up. At home it was so much easier: Sanda did as she was told, and did not have to claim to love it.

A week later the fair weather broke. It rained. And rained. And rained. And when it wasn't raining it was cloudy; not cloudy as in La Jolla, but a dripping, misty cloudiness that just promised more rain. Grandma said it was often this way; Sanda had just been lucky on the previous visits.

And it was about this time she began to be afraid of the upstairs. Grandmother slept downstairs, though she stayed up very late at night, reading or sewing. She would be easy to call if anything . . . bad happened. That did not help. At first it was like an ordinary fear of darkness. Some nights a person is just more fidgety than others. And after the weather turned bad it was easy to feel scared, lying in bed with the wind and the rattle of rain against the windows. But this was different. The feeling increased from night to night. It wasn't quite a feeling that something was sneaking up on her. More it was a sense of utter desolation and despair. Sometimes it seemed as if the room, the whole house, were gone and she was in just the antarctic wilderness that Grandfather had explored. She had no direct visions of this—just the feeling of cold and lifelessness extending forever. *Grandfather's ghost?*

Late one night Sanda had to go to the bathroom, which was down on the first floor next to Grandmother's bedroom. It was almost painful to move—so afraid was she of making a sound, of provoking whatever caused the mood that filled her room. When she passed the terrarium in the hallway, the feeling of cold grew stronger and her legs tensed for

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a sprint down the stairs. Instead she forced herself to stand still, then to walk slowly around the glass cage. Something in there was causing it. The terror was insidious, growing as she stood there—almost as if what caused this now knew it had a "listener." Sanda slept at the foot of the stairs that night.

After that, when night came and Grandmother had tucked her in, Sanda would creep out of bed, unwrap her sleeping bag, and quietly carry it onto the balcony that opened off her room. The extra distance and the extra wall reduced the psychic cold to a tolerable level. Many nights it was rainy, and it was always chill and a bit windy, but she had bought a really good sleeping bag for the Scouts, and she had always liked to camp out. Nevertheless, it wore her down to sleep like that night after night, and made it harder to be diplomatic and cheerful during the days.

In the daytime there was far less feeling of dread upstairs. Sanda didn't know whether this was because the second floor was basically a sunny, cheerful place or whether the ghost "slept" during the day. Whenever she walked past the terrarium she looked carefully into it. After a while, she thought she had the effect narrowed down to one particular rock—the skull-sized one with the strangely regular patterns of gray and black. As the days passed, the position of some of the rocks changed. There had been five plastic flowers in the terrarium when Sanda first saw it; now there were three.

There was one other mystery—which under other circumstances would have been very sinister, but which seemed scarcely more than an intriguing puzzle now. Several times, usually on stormy nights, a car parked in the grass just off the other side of the street, about forty yards north of the house. That was all; Sanda had noticed it only by accident. It looked like a '54 Ford. Once a match flared within the cab, and she saw two occupants. She smiled smugly, wistfully to herself; she could imagine what they were up to. But she was wrong. One night, when the rain had stopped yet clouds kept out the stars, the driver got out and walked across the street toward the house. He moved silently, quickly. Sanda had to lean out from the balcony to see him crouch in the bushes next to the wall where the electric power meter was mounted. He spent only half a minute there. She saw a tiny point of light moving over the power meter and the utility cables that came down from the telephone pole at the street. Then the phantom meter reader stood and ran back across the street, quietly relatching the door of his Ford. The car sat for several more minutes—as if they were watching the house for some sign of alarm—and then drove away.

She should have told Grandma. But then, if she were being as open as a good girl should be with a grandmother, she would have also confessed her fear of the upstairs and the terrarium. Those fears were shameful, though. Even if *real*, they were the type of childish thing that could only make her situation with Grandma worse. Grandmother was a clever person. Sanda knew that if she told her about the mysterious car, the older woman would either dismiss the story—or question her in sufficient detail to discover that Sanda was sleeping on the balcony.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

So she dithered—and in the end told someone else.

Finding that someone else had been a surprise; she hadn't really known she was looking. Whenever the weather dried a little, Sanda tried to get outdoors. The city library was about three miles away, an easy ride on her father's old bicycle. Of course Grandmother had been uneasy about Sanda carrying library books in the saddle baskets of the bike. There was always the risk of splashing water or a sudden rainstorm. It was just another of the polite little conflicts they had. One or the other of them could always see some objection to a given activity. In the end—as usual—they compromised, with Sanda taking grocery bags and a little waxed paper for the books.

Today wasn't wet, though. The big blocks of cloud left plenty of space for the blue. To the northwest, the plume from the paper mill was purest white across the sky. The sun was warm, and the gusty breeze dry. It was the sort of day she once thought was every day in Eureka.

Sanda took a detour, biking back along the street away from town. The asphalt ended about thirty yards past Grandmother's lot. There were supposed to be more houses up here, but Grandma didn't think much of them. She passed one. It looked like a trailer used as a permanent home. A couple old cars, one looking very dead, were in front. The trees came in close to the road here, blocking out the sun. It felt a little like those great forests they'd driven through to get to Eureka. Even after a half day of sun, there was still a slow dripping from the needles. Everything was so green it might as well be dipped in paint. Once she had liked that.

She went a lot farther south than she had before. The road stopped at a dead end. A one-storey, red-shingled house was the last thing on the street. It was a real house, but it reminded Sanda of the trailer. It was such a different thing from Grandmother's house. There were a lot of small houses in La Jolla, but the weather back home was so dry and mild that buildings didn't seemed to wear out. Here Sanda had the feeling that the damp, the cold, and the mildew were forever warring on the houses. This place had been losing the fight for some time.

She circled around the end of the road—and almost ran into a second bicyclist.

Sanda stopped abruptly and awkwardly. (The center bar on the bike was a little high for her.) "Where did you come from?" she asked a bit angrily.

The boy was taller than Sanda, and looked very strong. He must be at least fifteen years old. But his face was soft, almost stupid-looking. He waved at the red-shingled house. "We live here. Who are you?"

"Sanda Beauchamp."

"Oh, yeah. You're the girl staying with the old English lady."

"She is not an old lady. She's my grandmother."

He was silent for a moment, the baby-face expressionless. "I'm Larry O'Malley. Your grandmother is okay. Last summer I did her lawn."

Sanda untangled herself from the bicycle and they walked their bikes back

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the way she had come. "She has regular gardeners now."

"I know. She's very rich. Even more than last year."

Grandma wasn't rich. It was on the tip of her tongue to contradict him, but his second statement made her pause, puzzled. *Even more than last year?*

They had walked all the way back to Grandmother's before Sanda knew it. Larry wasn't really sullen. She wasn't sure yet if he was smart or stupid; she knew he wasn't as old as he looked. His father was a real lumberjack, which was neat. Most of Sanda's parents' friends were geologists and things like that.

They parked their bikes at the steps, and Sanda took him in to see Grandmother. As she had expected, the elder Beauchamp was not thrilled with Sanda's plans for the afternoon.

She looked uncertainly at the boy. "But, Larry, isn't that a long ride?"

Sanda was not about to let Larry blow it. "Oh no, Grandma, it's not much farther than the library. Besides, I haven't been to a movie in so long," which was true, though Grandmother's television did a great job of dragging in old movies from the only available station.

"What's the film? It's such a nice day to waste inside a theater."

"Oh, they're playing movies from the early fifties." That sounded safe. Grandma had complained more than once about the immorality of today's shows. Besides, if she heard the title, she would be sure to refuse.

Grandmother seemed almost distraught. Then she agreed, and walked out to the screened porch with them. "Come back before four."

"We will. We will." And they were off. She didn't know if it was the weather, or meeting Larry, or the prospect of the movie, but suddenly she felt wonderful.

The Thing from Outer Space. That's what it said on the marquee. She felt a little guilty deceiving Grandma about the title. It wasn't really the sort of show her parents would want her to see. But just seeing a movie was going to be fun. It was like home. This theater reminded her a lot of the Cove in La Jolla. After they got their tickets they drifted down the movie posters.

And Sanda began to feel a chill that was not in the air and that was not the vicarious thrill of watching a scary show. This *Thing* was supposed to be from outer space, yet the posters showed arctic wastes. . . .

She found herself walking more slowly, for the first time letting the boy do most of the talking. Then they were inside, and the movie had begun.

It was a terrible thing, almost as if God had created a personal warning, a personal explanation for Sanda Rachel Beauchamp. *The Thing* was what had been after her all these weeks. Oh, a lot of the details were different. The movie took place in the arctic; the alien monster—the Thing—was crudely man-shaped. Sanda sat, her face slack, all but hypnotized by these innocently filmed revelations. About halfway through the movie, Larry nudged her and asked if she were okay. Sanda just nodded.

The Thing had been stranded. In the polar wastes the temperature and lack of predators allowed it to survive a very long time. The dry antarctic valleys Grandpa discovered might be even bet-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ter: Things from long, long ago would be right at the surface, not hidden beneath hundreds of feet of ice. The creature would be like a time bomb waiting to be discovered. When exposed to light and warmth—as Grandma had done by putting it in the sunny terrarium—it would come to life. The movie Thing looked for blood. Sanda's Thing seemed after something more subtle, more terrible.

Sanda was scarcely aware when the movie ended, so perfectly did its story merge with the greater terror she now felt. It was still middle afternoon, but the berglike clouds had melded together, thick and deep and dark. The wind was picking up, driving through her sweater and carrying occasional drops of wet. They recovered their bikes, Sanda dazed, Larry O'Malley silently observant.

It was uphill most of the way back, but now the wind was behind them. The forests beyond the town were blackish green, sometimes turned gray by passing mist. The scene didn't register with her. All she could think of was the cold and the ice and the thing waiting for her up ahead.

Larry reached out to grab her handlebars as the bike angled toward the ditch. "Really. What's the matter?"

And Sanda told him. About the strangely mottled antarctic rock and the terrarium. About its movement and the desolation it broadcast.

The boy didn't say anything when she finished. They worked laboriously up a hill past neat houses, some of them Victorian, none as beautiful as Grandmother's. As usual, traffic was light —nonexistent by the standards of home. They rode side by side with the entire road to themselves. Finally they reached the top and started down a gentle slope. Still Larry hadn't said anything. Sanda's haze of terror was broken by sudden anger. She pedaled just ahead of him and waved her hand in his face. "*Hey!* I was talking to you. Don't you believe me?"

Larry blinked, his wide face expressionless. He didn't seem to take offense. He spoke, but didn't directly answer her question. "I think your Grandma is a smart person. And I always thought she had some strange things in that house. She put the rock up there; she must know something about it. You should ask her straight out. Or do you think *she* wants to hurt you, too?"

Sanda lagged back even with Larry and felt a little bit ashamed. She should have brought this up with Grandma weeks ago. She knew why she had not. After all the little conflicts and misunderstandings, she had been afraid that a fearful story like this would have weakened her position even further, would have reinforced Grandma's view of her as a child. Saying these things out loud seemed to make them smaller. But having said them, she could also see that there was something *real* here, something to fear, or at least to be concerned about. She looked at Larry and smiled with some respect. Perhaps he wasn't very imaginative—after all, nothing seemed to disturb him—but being with him was like suddenly finding the ground in the surf, or waking up from a bad dream.

Blocks of mist chased back and forth around them, but they were still dry

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

when they got home. They stood for a moment on the grassy shoulder of the road.

"If you want to go to the sand dunes tomorrow, we should start early. It's a long ride from here." She couldn't tell if he had already forgotten her story, or if he was trying to reassure her.

"I'll have to ask Grandmother," *about that and certain other things.* "I'll see you tomorrow, anyway."

Larry pedaled off toward his house, and Sanda walked the bike around to the tool shed. Grandma came out to the back porch, and worried over the damp on Sanda's sweater. She seemed nervous, and relieved to see Sanda back.

"My, you've been gone so long. I've got some sandwiches made up in the kitchen." As they walked into the house, Grandma asked her about the movie and about Larry. "You know, Sanda, I think the O'Malley boy is nice enough. But I'm not sure your Mum and Dad would want you spending so much time with him. Your interests are so different, don't you think?"

Sanda was not really listening. She took the other's hand. It was a child-like gesture that stopped the older woman short. "Grandma, there's something I've *got* to talk to you about. Please."

"Of course, Sanda."

They sat down, and the girl told her of the terror that soaked the upstairs every night so strongly that she must sleep on the balcony.

Grandma smiled tentatively and patted Sanda's hand. "I'll wager it's those Maori statues. They would scare anyone, especially in the dark. I shouldn't have told you all those stories about them. They're just wood and—"

"It's not them, Grandmother." Sanda tried to keep the frustration out of her voice. She looked out of the kitchen, down the hall into the living room. She could see one of the statues there, sticking its tongue at her. It was lovely, and frightening in a fun sort of way, but that was all. "It's the terrarium, and especially one rock there. When I'm near it, I can feel the cold get stronger."

"Oh dear." Grandmother looked down at her hands and avoided Sanda's eyes. For a moment she seemed to be talking only to herself. "You must be very sensitive."

Sanda's eyes widened. Even after all this time, she hadn't really expected anyone to believe. And now she saw that Grandma had known something about this all along.

"Oh, Sanda, I'm so sorry. If I thought you could sense it, I would never have put you up there." She reached out to touch Sanda, and smiled. "There really is nothing to fear. That's my, uh, Gemstone." She stumbled on the name, looked faintly worried. "It has always been a little secret of your grandfather's and mine. If I tell you about it, will you keep the secret, too?"

The girl nodded.

"Let's go up there, and I'll show you. You're right that the stone can make you feel things. . . ."

As Grandma had told her before, Rex Beauchamp had found the Gemstone on one of the first expeditions into the dry valleys. He probably should have turned his discovery over to the expedition's collection. But in those early days there was a more casual attitude about individual finds, and besides, Grandfather

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

was continually shunted aside from the credit he deserved. He was simply the fellow who fixed all the little things that went wrong. After retirement he hoped to set up his own small lab here, to look into this and several other mysteries he had come across over the years.

Grandfather had kept the Gemstone in a special locker down in the lab/ basement. He hoped to imitate its original environment. At first Grandpa thought the rock was some special crystal that stored and reflected back the emotions of those around it. When he held it in his hand, he could feel the winds and desolation of the antarctic. If he touched it an hour later, he felt vague reflections of his mood *at the time of the previous encounter*.

When he cut it with a lapidary saw, the mental shriek of pain showed both of them the Gemstone was not psychic mineral, but living thing.

"We never told anyone what we had discovered. Not even your father. Rex kept it in the basement, and as cold as possible. He was so afraid that it would die." They had reached the second floor and were walking down the short hallway toward the terrarium. The skylight was pale gray, and rain was beginning to splatter off it. The cold and loneliness were not quite as sharp as after dark, but it took an effort for Sanda to approach the rock.

"I looked at it differently. It seemed to me that if the Gemstone could survive all those centuries of no food, no water —well then, maybe it was tough. Maybe even it would like light and warmth. After your grandfather died, I took the stone and put it in this nice aquarium box up here where there is light. I know it is alive; I think it likes it up here."

Sanda looked down at the black and grey whorls that marked its rough exterior. The shape was not symmetrical, but it was regular. Even without the chill beating against her mind she should have known it was alive. "What . . . what does it eat?"

"Um." Grandma paused for just a second. "Some of the rocks. Even those flowers. I have to replace them now and again. But it's mindless. It's never done anything more than what Rex originally noticed. It's just that now—up here in the light—it does them a bit more often." She saw the pain on Sanda's face. "You can feel the stone even that far away?" she asked wonderingly.

Grandma reached down and touched the top of the Gemstone with the palm of her hand. She winced. "Ah, it is projecting that old cold-and-desolate pattern. I can see why that bothers you. But it's not intended to be hurtful. I think it's just the creature's memory of the cold. Now just wait. It takes a minute or so for it to change. In some ways it's more like a plant than an animal."

The psychic chill faded. What remained was not threatening, but—with her present sensitivity—was unsettling. Grandma motioned her closer. "Here. Now you put your hand on it, and you'll see what I mean."

Sanda advanced slowly, her eyes on her grandmother's face. Above them, the rain droned against the skylight. *What if it's all a lie?* thought Sanda. Could the creature take people over and make them go after others?

But now that the mental pressure was gone, it seemed just a little bit unbe-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

lievable. She touched the Gemstone first with her fingertips and then with the flat of her hand. Grandmother's hand was still on the rock, though not quite touching hers. Nothing happened. It was cold as any rock might be in this room. The surface was rough, though regular. The seconds passed and slowly she felt it: It was Grandma! Her smile, a wave of affection—and behind that, disappointment and an emptiness more muted than the stone usually broadcast. Still, there was a warmth where before there had been only cold.

"Oh, Grandmother!" The older woman put her arm across Sanda's shoulders, and for the first time in weeks, the girl thought there might be a lasting reconciliation. Sanda's hand strayed from the Gemstone and brushed through the pebbles that were its bed. They were ordinary. The Gemstone was the only strange thing in the terrarium. Wait. She picked up a smallish pebble and held it in the light, scarcely noticing the sudden tension in Grandma's arm. The tiny rock might have been glassy except for the milky haze on its surface. It felt almost greasy. "This isn't a real rock, is it, Grandma?"

"No. It's plastic. Like the flowers. I just think it's pretty."

"Oh." She dropped it back into the terrarium. Another time, she might have been more curious. For now, everything was swamped by her relief in discovering that what had terrorized her for so long was not a threat but something very wonderful. "Thank you. I was so afraid." She laughed a little ruefully. "I really made a fool of myself this afternoon, telling Larry I thought the Gemstone was some kind of monster."

Grandmother's arm slipped away from her shoulder. "Sanda, you mustn't—" she began sharply. "Really, Sanda, you mustn't be going out with the O'Malley boy. He's simply too old for you."

Sanda's reply was casually argumentative; she was still immersed in a rosy feeling of relief. "Oh, Gran. He's going into ninth grade this fall. He's just big for his age."

"No. I'm sure your mother and dad would be very upset with me if I let you be off alone with him."

The sharpness of her tone finally came through to Sanda. Grandma had on her determined look. And suddenly the girl felt just as determined. There was no valid reason for her not to see Larry O'Malley. Grandma had hinted around at this before: she thought her neighbors up the road were lower class, both in background and present accomplishment. If there was one thing really wrong with Grandmother it was that she looked down on some people. Sanda even suspected that she was racially prejudiced. For instance, she called Negroes "colored people."

The double injustice of Grandma's demand was too much. Sanda thrust out her quivering jaw. "Grandmother, I'll go out with him if I want. You just don't want me to see him because he's poor . . . because he's Irish."

"*Sanda!*" The older woman seemed to shrink in upon herself. Her voice was choked, hard to understand. "I had so looked forward to this summer with you. B-but you're not the nice little girl you once were." She stepped around Sanda and hurried down the stairs.

Sanda looked after her open-mouthed.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Then she felt tears turning into sobs, and rushed into her bedroom.

She sat on the bedroom balcony and looked out into the gloom and the rain. The pine trees along the street were great dark shadows, swaying and talking in the dusk. From a hundred yards away, the light of a single street lamp found its way through the pines to make tiny glittering reflections off the slick street. She hunched down in her oversized jacket and let the driven mist wash at the tears that trickled down her face. Daddy and Mom would be here in six days. Six days. Sanda unclenched her jaws and tried to relax her face. How could she last?

She had sat here for hours, going around and around with these questions, never quite getting the pain rationalized, never quite finding a course of action that would not be still more painful. She wondered what Grandma was doing now. There had been no call to supper, or to help with supper. But there had been no sounds of cooking either. She was probably in her room, going through the same thing Sanda was. Grandma's last words . . . they almost described her own grief all these weeks.

Grandmother had looked so small, so frail. Sanda was almost as tall as she, but rarely thought about it. It must have been hard for Grandma to have a guest she thought of as a child, a guest to whom she must always show the most cheerful face, a guest with whom every disagreement was a tiny failure.

And even this vacation had not been all bad. There had been the evenings when the weather was nice and they had stayed out on the screened porch to play caroms or Scrabble. Those had been just as good as before—better in some ways, now that she could understand Grandma's little jokes and appreciate her impish grin when she made some clever countermove.

The girl sighed. She had been through these thoughts several times in the last hours. Each time she returned to them, they seemed to gain strength over the recriminations. She knew that in the end she would go downstairs, and try to make up. And maybe . . . maybe this time it could really work. This break had gone so deep and hurt so much that maybe they could start out in a new way.

She stood up and breathed the clean, cold, wet air. The keening of the Gemstone in the back of her mind was a prod now. There was more than cold in the Gemstone's call; there was a loneliness she knew came in part from those around it.

As Sanda turned to enter the bedroom, a flash of headlights made her look back. A car was driving slowly by. . . . It looked like a '54 Ford. She stayed very still until it was out of sight, then dropped to her knees so that just her head was above the balcony. If this were like the other visitations . . .

Sure enough, a couple minutes passed and the Ford was back—this time without its lights. It stopped on the other side of the road. The rain was heavy, and the wind came in gusts now. Sanda wasn't sure, but it looked like *two* people got out of the car. Yes. There were two. They ran toward the house, one for the power meter, the other heading out of sight to her left.

This was more than the mysterious intruders had ever done before. And

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

somehow there was a purposefulness in it tonight. As if this were no rehearsal. Sanda leaned out from the balcony. Her curiosity was fast giving way to fear. Not the psychic, moody fear the Gemstone broadcast, but a sharp, call-to-action type of fear. *What is that guy doing?* The dark figure maneuvered a small light, and something else. There was a snapping noise that came faintly to her over the rain.

And then she knew. It wasn't just the power cable that came down to that side of the house; the phone line did, too.

Sanda whirled and dived back into her bedroom, shedding the jacket as she ran. She sprinted by the terrarium, barely conscious of the mood emerging from the Gemstone.

Grandmother stood at the bottom of the stairs, looking as if she were about to come up. She appeared tired, but there was a wan smile on her face. "Sanda, dear, I—"

"Grandma! Somebody's trying to break in. *Somebody's trying to break in!*" Sanda came down the stairs in two crashing leaps. There was a shadow on the porch where no shadow should have been. Sanda slammed the bolt to just as the doorknob began to turn. Behind her, Grandmother stared in shocked silence. Sanda spun and ran toward the kitchen. Once they had the intruders locked out, what could she and Gran do without a phone?

She nearly ran into him in the kitchen. Sanda sucked in a breath so hard she squeaked. He was big and hooded. He also had a knife. Strange to see such a man in the middle of the glistening white kitchen—the homey, comforting, *safe* kitchen.

From the living room came the sound of splintering wood, and Grandmother screamed. Running footsteps. Something metal being kicked over. Grandmother screamed again. "Shut your mouth, lady. I said, *shut it.*" The voice—though not the tone—was vaguely familiar. "Now where is that prissy little wimp?"

"I got her in here," called the man in the kitchen. He caught Sanda's upper arm in a grip as painful as any physical punishment she had ever received and marched her into the living room.

Grandma looked okay, just scared and very small next to the fellow holding her. Even with the hooded mask, Sanda thought she recognized him. It was the clerk from the little grocery store they shopped at. Behind them, the electric heater lay face down, its cherry coils buried in the carpet.

The clerk shook Grandma at every syllable he spoke. "All right, lady. There's just one thing we want. Show us where they are and we'll go." This was the sense of what he said, though not the precise words. Many of those words were ones Sanda knew but had previously heard only from the rougher girls in gym class, where there was much smirking and giggling over their meaning. Here, said in deadly anger, those words were themselves an assault.

"I've a couple rings—"

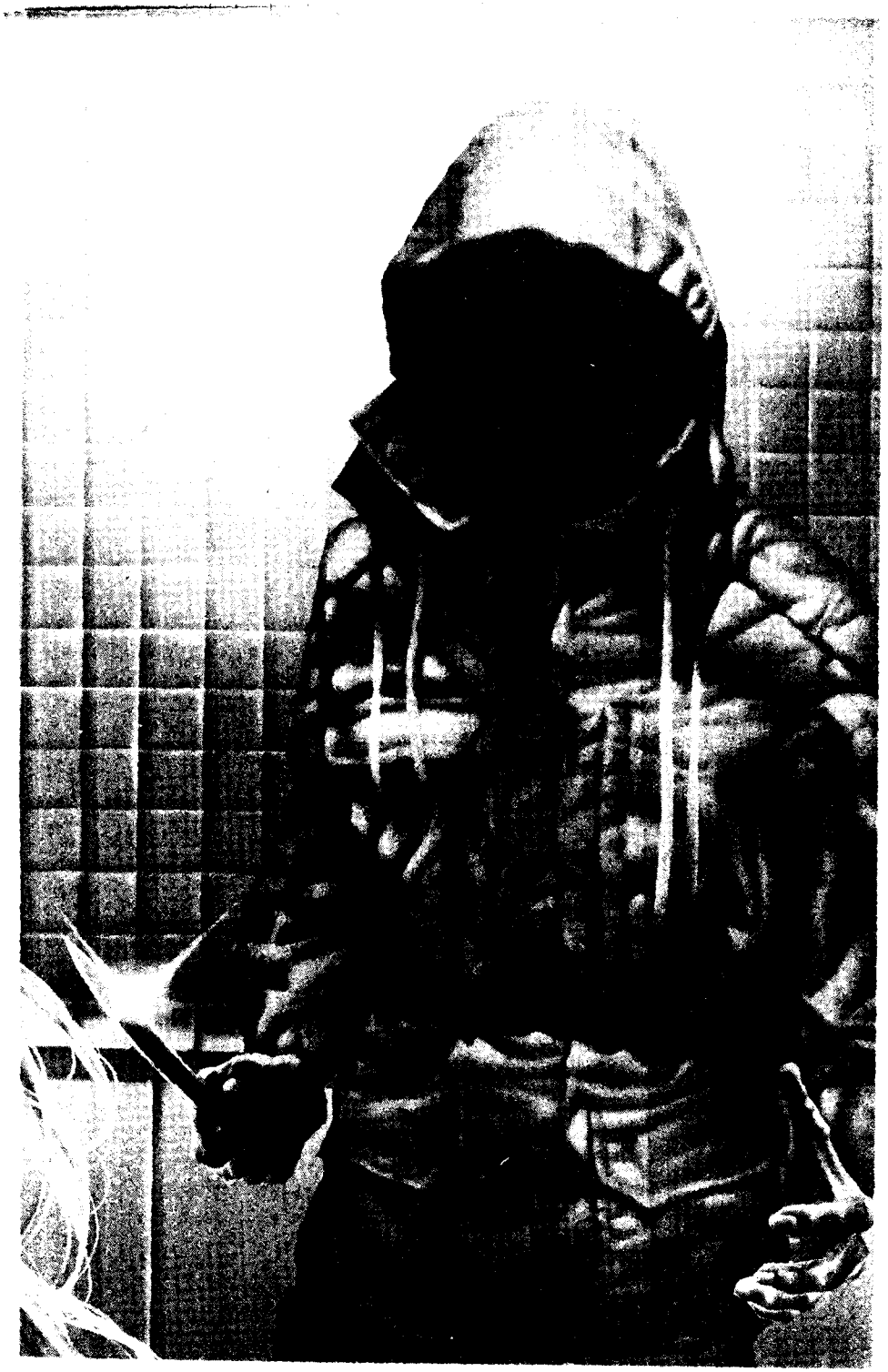
"Lady, you're rich and we know how you got it."

Grandma's voice was quaking. "No, just my husband's investments." That was true. Sanda had overheard Grandma telling Sanda's surprised father the size of Rex Beauchamp's estate.

The clerk slapped her. "Liar. Two

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

or three times a year you bring a diamond into Arcata Gems. A rough diamond. Your husband was the big-time explorer." There was sarcasm in the words. "Somewhere he musta found quite a pile of 'em. Either that or you *got a diamond machine in your basement.*" He laughed at his joke, and suddenly the girl saw through several mysteries. *Not in the basement—upstairs.*

"We know you got 'em. We want 'em. We want 'em. We want 'em. We—" As he spoke, he slapped her rhythmically across the face. Someone was screaming; it was Sanda. She barely knew what she did then. From the corner of her eye she saw Grandma's *meri* lying on the sewing table. She swept it up with her free hand and pivoted swiftly around her captor, swinging the flattened stone club into the clerk's chest just below the ribs.

The man went down, dragging Grandmother to her knees. He sat on the floor for several seconds, his mouth opening and closing soundlessly. Finally he could take great, gasping breaths. "I'll. Kill. Her." He came to his feet, one hand still on Grandma's shoulder, the other weaving a knife back and forth in front of Sanda.

The other fellow grabbed the *meri* from Sanda's hand and pulled the girl back from the clerk. "No. Remember."

The clerk pressed his knife hand gently against his chest, and winced. "Yeah." He pushed Grandmother down onto the sofa and approached Sanda.

"Lady, I'm gonna cut on your kid till you start talking." He barely touched the knife to Sanda's forearm. It was so sharp that a thin line of red oozed, yet the girl scarcely felt it.

Grandma came off the sofa. "Stop! Don't touch her!"

He looked around at her. "Why?"

"I-I'll show you where the diamonds are."

The clerk was genuinely disappointed. "Yeah?"

"You won't hurt us afterwards?"

The one holding Sanda touched his mask. "All we want are the diamonds, lady."

Pause. "Very well. They're in the kitchen."

Seconds later, Mrs. Beauchamp showed them where. She opened the cabinet where she kept flower and sugar and withdrew a half-empty bag of rock salt. The clerk grabbed it from her, then swept the salt and pepper and sugar bowl off the kitchen table. He carefully upended the bag of rock salt and spread it so that no piece sat on another. "Do you see anything?" he said.

The other man spent several minutes examining the table. "One," he said, and moved a tiny stone to the edge of the edge of Grandmother's china rack. It looked glassy except for a milky haze on its surface. "Two." He looked some more.

No one spoke. The only sounds were the clerk's harsh breathing and the steady throbbing of rain against the windows. The night beyond the windows was black. The nearest neighbors were hidden beyond trees.

"That's all. Just the two."

The clerk's obscenities would have been screamed if his chest had been up to it. In a way his quiet intensity was more frightening. "You sold ten of these the last three years. You claim you're down to *two?*"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Grandma nodded, her chin beginning to quiver.

"Do you believe her?"

"I don't know. But maybe it doesn't matter. We've got all night, and I want to cut on that girl. Either way, I'll get what's due me." He motioned with his knife. "C'mere you."

"Just as well. I think they recognize you." The vise on Sanda's upper arm tightened and she found herself pushed toward the point of the knife.

"Smell something burning?" her captor said abruptly.

The clerk's eyes widened, and he stepped out of the kitchen to look down the hall. "Jesus, yes! The carpet and some newspapers. It's that heater."

"Unplug the heater. Roll the carpet over it. This place burns, we got nothing to search!"

"I'm trying." There were awkward shuffling sounds. "Need help."

The man holding Sanda looked at the two women. She saw his hand tighten on his knife. "I know where the rest of them are," Grandma suddenly said.

He grabbed her, too, and hustled them to the basement door. Sanda was shoved roughly through. She crashed backwards against the rack of brooms and fell down the steps into the darkness. A second later Grandma's frail body fell on top of hers. The door slammed, and they heard the key turn in the lock.

The two of them lay dazed for a second. Next to her face, Sanda could smell the moldy damp of the stairs. Part of a mop seemed to be strung across her neck. "Are you okay, Grandmother?"

Her answer was immediate. "Yes. Are you?"

"Yes."

Grandma gave an almost girlish laugh. "You make rather a good pillow to land on, dear." She got up carefully and switched on the stairs light. There was that impish smile on her face. "I think they may have outsmarted themselves."

She led Sanda further down the steps and switched on another light. The girl looked around the small basement, made even smaller by the old sample crates and Grandma's laundry area. There was no way out of here, no windows set at ground level. What was Grandmother thinking of?

The older woman turned and slammed shut the interior hatch that Grandfather had mounted in the stairwell. Sanda began to see what she had in mind: The top of the stairs could be locked from the kitchen side, but this heavy door was now locked from their side!

Grandmother walked across the floor toward a stack of cases that sat under the living room. "Rex wanted this to be his laboratory. He was going to refrigerate—actually try to imitate polar conditions. That turned out to be much too expensive, but the heavy doors he installed can be useful. . . . Help me with these crates, please, Sanda."

They were heavy, but Grandma didn't care if they went crashing to the floor. In minutes Sanda saw that they were uncovering another stairway, one that must open onto the living room. "If they can put the fire out as easily as they should, then we'll simply wait them out. Even a small fire can be seen from the street, and I'll wager the Fire Department will be here straight away. But if the fire wins free and the whole house goes . . ." There were new tears streak-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ing her face. She swayed slightly on her feet, and Sanda realized that the older woman had been limping.

Sanda put her arm about her grandmother's waist. "Are you sure you're okay?"

Grandma looked at her and smiled. Her face was little bit puffy, swelling from the blows to it. "Yes, dear." She bowed her head and touched her front teeth. "But my dentist will be overjoyed by all this, I fear."

Grandmother turned back to the door and wiped at a quartz port set in the metal. "I still don't know why Rex wanted this stair up to the living room. P'raps he just felt obliged to use both the surplus hatches he bought."

Sanda looked through the tiny window. It was a viewpoint on the living room she had never imagined. They were looking through the decorative drapes that covered the wall behind the sofa.

The robbers had pulled off their masks and were madly dragging furniture—including the sofa—away from the blaze. They had rolled the carpet over the fire, but it was still spreading, leaking out toward the TV and the Maori statues on the far wall.

The floor itself was starting to burn.

The men in the living room saw this, too. The clerk shouted something that came only faintly through the insulated walls. Then they ran out of view. The fire spread up the legs of the TV and onto a Maori statue. For a moment, the figure blazed in a halo of light. Flames played from the twisted hands, from the thrusting tongue.

The lights in the basement went out, but the red glow through the quartz window still lit Grandma's face. "They couldn't save it. They couldn't save it." Her voice was barely audible.

Heavy banging at the other hatch, the one to the kitchen. Sanda knew that was no rescue, but murder denied. The banging ceased almost immediately; these two witnesses would live to tell their story.

She looked back through the quartz. The fire was spreading along the far wall. Their side of the living room was untouched. Even the drapes seemed undamaged.

"I've got to go out there, Sanda."

"No! . . . I-I'm sorry, Gran. If they couldn't save it, we can't."

"Not the house, Sanda. I'm going to save the Gemstone." There was the strain of physical exertion in her voice, but the girl couldn't see what she was doing. Only Grandma's face was lit by the rose and yellow light. She was not pushing on the door; Sanda could see that much.

"You can't risk your life for diamonds, Grandma. Dad and Mom have money. You can stay—"

The older woman grunted as though pushing at something. "You don't understand. The diamonds have been wonderful. I could never have lived so free with just the money Rex left me. Poor Rex. The Gemstone was his greatest find. He knew that. But he kept it in a freezer down here, and never saw the miracle it really is.

"Sanda, the Gemstone is not just a thing that eats plastic flowers and passes diamonds. It is not just a thing that sends out feelings of cold and emptiness—those are simply its memories of Antarctica.

"Next to you and your dad—and your

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

mum—I value the Gemstone more than anything. When I put my hand on it, it glows back at me—you felt that, too. It is friendly, though it scarce seems to know me. But when I touch it long enough, I feel Rex there, I feel the times he must have touched the stone . . . and almost I feel that he is touching me."

She grunted; Sanda heard something spinning on oiled bearings. There was a popping noise from the hatch and Sanda guessed it could be pushed open now.

"The fire is along the outer wall. I have room to get to the stairs. I can pick up the Gemstone and get out down the back stairs—on the other side of the house from the fire. You'll be safe staying here. Rex was very thorough. The basement is an insulated hull, even over the ceiling. The house could burn right down and you'd not be harmed."

"No. I'm going with you."

Grandmother took a breath. There was the look on her face of someone who must do something very difficult. "Sanda. *If you ever loved me*, you will obey me now: stay here."

Sanda's arms hung numb at her sides. If you *ever* loved me . . . It was many years before she could live with her inaction of those next few seconds.

Grandma pushed the door back. The drapes parted and there was a wave of heat, like standing near a bonfire. The air was full of popping and cracking, but the drapes that swung into the opening were not yet singed. Gran pulled the cloth away and pushed the door shut. Through the quartz window Sanda saw

SUBSCRIBER ASSISTANCE

MOVING? We need 6 weeks' notice. Please attach your label to the space below and write in your new address.
QUESTION or PROBLEM? It can be handled faster if we have your label.
IMPORTANT MESSAGE: Time to time the ANALOG mailing list is made available to companies that want to send promotional material offering their products. To do this they must have our approval of the mailing piece itself and of what they are selling. If you prefer not to receive these mailings, please tell us and we will remove your name. Write to the address below.
EXPIRATION DATE: In the upper right hand corner of your mailing label you'll find the date of your last issue—e.g., JAN 84 means your subscription expires with the January 1984 issue.

New address? Put new address below.

Please attach here your ANALOG label from the cover of your most recent issue.

ANALOG SCIENCE FICTION/ SCIENCE FACT BOX 1936 MARION, OH 43305

Name_____

Address_____

City_____ **State**_____ **Zip**_____

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

her moving quickly toward the stairs. She started up them—was almost out of sight—when she looked down, puzzlement on her face.

Sanda saw the fire burning out of the wall beneath her an instant before the stairs collapsed and Grandmother disappeared. The house groaned and died above her.

"Grand*ma!*" Sanda crashed against the metal door, but it would not open now: ceiling timbers had fallen across it. The scene beyond the quartz was no longer recognizably a home. The fire must have burned behind the walls and up under the stairwell. Now much of the second floor had collapsed onto the first. Everything she could see was a glowing jumble. The heat on her face was like looking through a kiln window. Nothing out there could live.

And still the heat increased. The fallen center of the upstairs left a natural flue through the skylight. For a few moments the heat and rushing winds lived in equilibrium, and the flames steadied to uniform brilliance. Brief stillness in hell.

She would have felt it sooner if she had been waiting for it, or if its mood hadn't been so different from all that went on about her: a chime of happiness, clear and warm. The feeling of sudden freedom and escape from cold.

Then she saw it: Its surface was no longer black and gray. It glowed like the ends of the burning timbers but with overtones of violet that seemed to penetrate its body. And now that it moved, she could see the complete regularity of its shape. The Gemstone was a cross between a four-legged starfish and a very small pillow. It moved nimbly, gracefully through the red jumble beyond the quartz window, and Sanda could feel its exuberance.

Grandfather had been wrong. Grandmother had been wrong. The cold and desolation it had broadcast were not memories of antarctic centuries, but a wordless cry against what *still* was cold and dark to it. How could she have missed it before? Daddy's dog, Tyrann, did the same thing: locked out on a misty winter night he keened and keened his misery for hours.

Gemstone had been alone and cold much, much longer.

And now—like a dog—it frisked through the brightness, eager and curious. It stopped and Sanda felt its puzzlement. It pushed down into the chaos that had been the stairs. The puzzlement deepened, shaded into hurt. Gemstone climbed back out of the rubble.

It had no head, no eyes, but what she saw in its mind now was clear: it felt her and was trying to find where she was hiding. When it "saw" her it was like a searchlight suddenly fixing on a target; all its attention was on her.

Gemstone scuttled down from its perch and swiftly crossed the ruins. It climbed the wood that jammed shut the door and—from inches away—seemed to peer at her. It scampered back and forth along the timber, trying to find some way in to her. Its mood was a mix of abject friendliness, enthusiasm, and curiosity that shifted almost as fast as the glowing colors of its body. Before tonight it had taken minutes to change from one mood to another; before, it had been frozen to near unconscious-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ness. All those centuries before, it had been barely alive.

Sanda saw that it was scarcely more intelligent than she imagined dogs to be. It wanted to touch her and didn't realize the death that would bring. Gemstone climbed back to the little window and touched a paw to the quartz. The quartz grew cloudy, began to star. Sanda felt fear, and Gemstone immediately pulled back.

It didn't touch the quartz again, but rubbed back and forth across the surface of the door. Then it settled against the door and let Sanda "pet" it with her mind. This was a little like touching it had been before. But now the memories and emotions were deeper and changed quickly at her wish:

There was Grandmother, alive again. She felt Grandma's hand resting on her (its) back. Wistful sometimes, happy sometimes, lonely often. Before that there was another, a man. Grandpa. Bluff, inquisitive, stubborn. Before that . . . Colder than cold, not really conscious, Gemstone sensed light all around the horizon and then dark. Light and darkness. Light and darkness. Antarctic summer and antarctic winter. In its deadened state, the seasons were a flickering that went on for time the little mind in the starfish body could not comprehend.

And before that . . .

Wonderful warmth, even nicer than now. Being cuddled flesh against flesh. Being valued. There were many friends, personalities strange to Sanda but not unknowable. They all lived in a house that moved, that visited many places —some warm and pleasant, some not. It remembered the coldest. In its curiosity, Gemstone wandered away from the house, got so very cold that when the friends came out to search, they could not find. Gemstone was lost.

And so the long time of light-and-dark, light-and-dark had begun.

The pure, even hell of the fire lasted only a few minutes. Gemstone whimpered in her mind as the walls began to fall, and the wind-driven cycle of flame faltered. The hottest places were in the center of what had been the living room, but Gemstone remained propped against Sanda's door, either for her company or in hopes she could bring back the warm.

Rain was winning against fire. Steam and haze obscured the glowing ruins. There might have been sirens.

She felt Gemstone chill and slowly daze. Its tone was now the nearly mindless dirge of all the weeks before. Sanda slid to the floor. And cried. ■

● There is no instance of a country having benefited from prolonged warfare. . . . It is only one who is thoroughly acquainted with the evils of war who can thoroughly understand the profitable way of carrying it on.

Sun Tzu, *The Art of War*, 500 BC

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

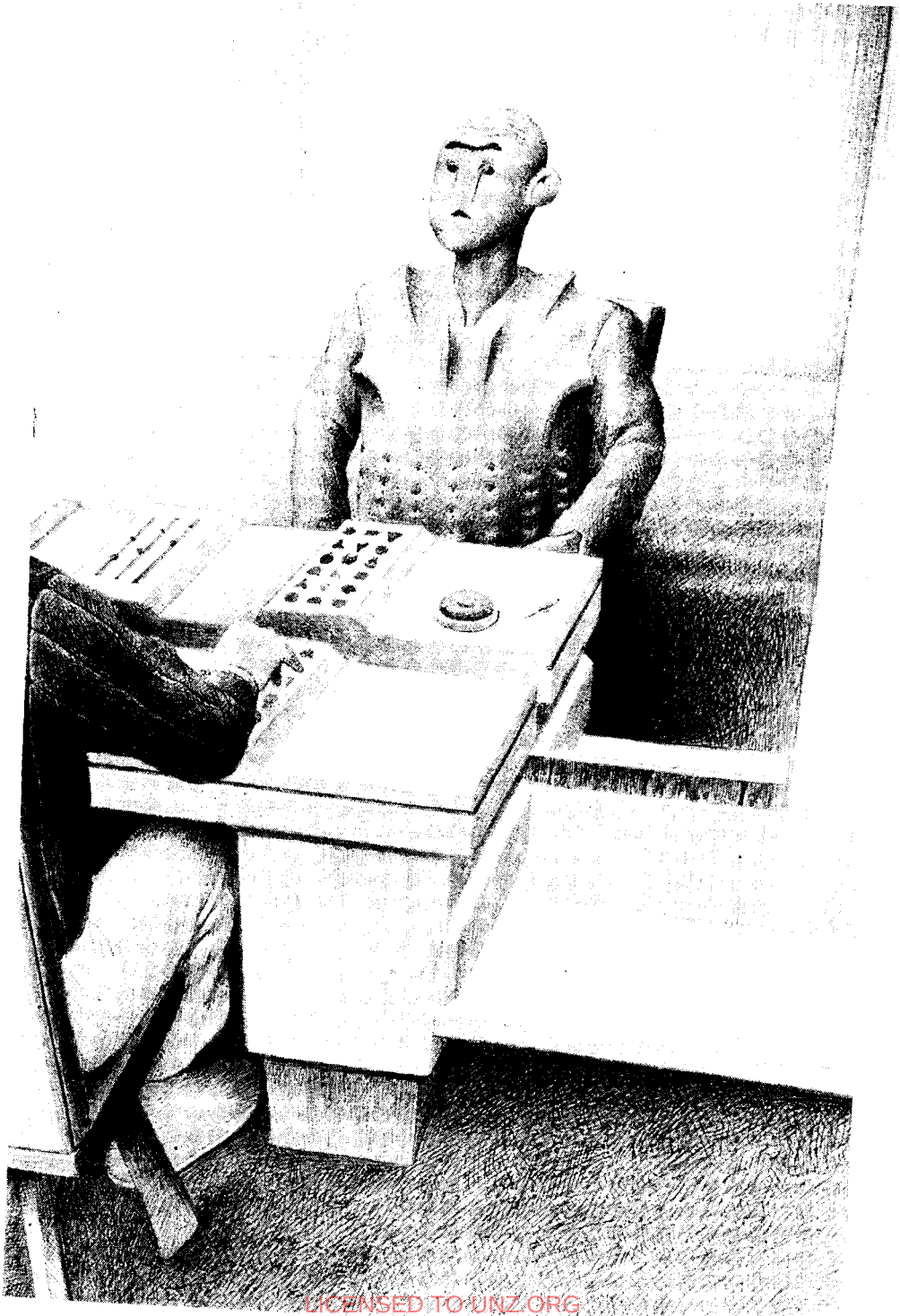
FROM TIME TO TIME

Bruce Stanley Burdick

If certain cosmologists are right, our very distant descendants will have a big, big problem. But even that may have a solution—for solving a problem is often largely a matter of looking at it in the right way.

Richard Crist

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

After a moment of disorientation the soul of Jinma Lor found a waiting body and entered.

He rose. Temporarily unaware of what he had just done, he began to inspect his surroundings. He found himself in a small rectangular room with a chair and a desk, facing a window into another room apparently a mirror image of the one he was in. The desk featured an array of buttons of various shapes. Each room had a single door in the right-hand wall.

The words "conference room" came to him. Jin sat in the chair and looked expectantly through the window toward the door in the opposite room. Suddenly he felt a disorientation as severe as what he had just been through. His eyes searched the rooms while he tried to get his bearings. When he realized what was wrong, he tried to calm himself. "By all the disembodied souls of my friends and ancestors. It worked."

Jinma Lor had had dreams enroute to the Outpost Between Universes. Departing from his home of ten local years, the planet Atlantis, had not seemed so great an emotional sacrifice at the time. He had felt like an alien among his own people; he could not wholeheartedly participate in the rituals which brought people together while keeping them apart. So he traded the confining and (for him) dull lifestyle of the overpopulated underground cities for a long nine years' proper time aboard the *Middle Earth*.

He passed time studying the language skills he would need at the Outpost. He became obsessed with chess. He dabbled with three-d pinball. When his traveling companions irritated him he sought company from the personalities which the starship's computer could simulate for him. He slept a lot.

Mixed in with the chaotic series of images in his dreams, Jin sometimes felt the presence of many beings. They called to him. They needed something from him. "Release us," they said. "Release us from this universe." Their forms were usually vague, but at times he got the impression that he should know them.

Repeating dreams were a new experience for him, and this gave him something to think about. Several years out he mentioned the matter to Elly-five, a fascinating person who wasn't real.

"I've been having strange dreams, Elly." Jin moved a piece on the board before him. "In the last one I was surrounded by a huge crowd of ghosts. They had human voices, but their bodies kept changing, taking on the forms of different alien races. They told me I was the only one who could help them, but when I asked them what they wanted they wouldn't answer. And the whole time I had a feeling of nervous anticipation, just like being on a shuttle and waiting for the engines to fire, only worse."

The computer-generated hologram called Elly-five turned away from the painting on which she was working and gave him a pensive look. "The fabric of your reality has developed a new wrinkle," she said. "If you don't smoothe it out soon, you will find your mental entropy still in creases." Elly folded her arms and grinned devilishly.

"I'm sorry I brought it up. It's your move."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Jin, you only like me for my mind!"

"What else is there?"

"Wouldn't you like to know! Pilot to alpha-three."

"In hologram one we have a simplified picture of the annihilation of matter and antimatter. The vertical axis represents time. A particle and its antiparticle enter at the bottom, meet here." The lecturing image which the ship's computer projected indicated points in his visual aid. He's wearing the same long black robe that he wore yesterday, thought Jinma Lor.

"Two photons are emitted, which exit through the top of the hologram.

"In hologram two we see the mutual scattering of a particle and a photon." Simplified, of course, thought Jin. "They enter through the bottom, meet here, and recoil away.

"The similarity of the two pictures suggests a reinterpretation of hologram one." Jin wondered if this was new material for anyone in the room. Most of them appeared to be paying attention. "Imagine this particle entering here, sending two photons into the future and, recoiling in time, becoming its own antiparticle. The particle and its antiparticle share the same world line, but the particle of matter is moving forward in time, while the antimatter is moving backward. Annihilation is just a turning around in time."

Maybe the computer should trim his beard, Jin mused.

Less than a year before arrival at the Outpost, the photons of an exploding star caught up with the *Middle Earth*. Intergalactic space being especially deserted in that region, there could be no mistake that Jinma Lor's homeworld was no longer there.

1. Don't touch the buttons. We don't know what they are for.

2. Whenever you are interrupted, frown.

3. It is useless to ask questions.

Jinma reread the list posted outside the door of the conference room. They seemed to be good guidelines for conversing with antipeople, as far as he knew. He entered the room at the traditional time. Surprisingly, no one was there yet, so he sat down in the chair and looked through the window, waiting.

Outpost was a pair of hemispherical space stations, fortuitously separated by a force field which held them a third of a meter apart (giving or taking microscopic oscillations). The field also acted as insulation, passing nothing which was made up of quarks and/or leptons. Generation of such a field was not yet within the realm of human technology. Myth maintained that the Outpost was simply found.

The conference room made possible face-to-face communication between the inhabitants of the two halves of the Outpost. Adjacent compartments of the two sides were mutually viewable through adjacent windows.

After a while Jin's counterpart among the aliens entered the opposite side of the room. Weightless, he closed the door and pushed off feet-first toward the chair across from Jin's. He took the impact with his legs and pulled himself into the chair. "Salutations."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Salutations," Jinma Lor answered in the special language he had so recently mastered.

"I have to find out what is wrong. The station's gravity field seems to be off here. I must arrive late, I regret."

The alien was remarkably humanoid, thought Jin. He wore a uniform that would not look too outlandish on a human. His noseless face betrayed the difference, though. The round ears were a bit too large and the forehead was grooved. His only hair took the form of bushy eyebrows that met between his eyes.

Jin noticed that the alien's weight seemed to settle into his chair. He recalled that since the other had stopped talking he should start.

"I'm Jinma Lor. I'm new at this," he said. "I'm very interested in what you can tell me about the future." He began to feel foolish. Fortunately, he saw the other Speaker frown. Jin frowned back, and the alien began to talk.

"We do not know who will create this Outpost, by the way. Many of your race will have brought you news of decay in your universe, as you will tell us. You are a new race in an old world, but our world is still young."

"They say that we found the Outpost ages ago. Abandoned, yet much as it is now, the Outpost." Jinma thought about what else the alien had said. "Depending on one's point of view, there has been a lot of increasing entropy lately." Jin recalled the fate of the planet Atlantis, but quickly expunged that image.

"I hope that we have met again," said the alien. "I will know you for nearly two years now."

"Perhaps, if it be possible for beings going opposite directions, we may become friends." It then occurred to Jin that speculation about the future was a silly thing to introduce into this conversation. "There are members of my race who have taken different paths through space-time from our origins to nearby here-and-now. There are those of my race with cultures more advanced than mine. Occasionally we meet them; they tell us that our universe is dying, some of my race." Jinma didn't notice the alien's frown. "We know that—"

"—will learn, maybe have learned much—" Jin was caught off guard and forgot to frown. "—from the stranger. When we find him he will speak no known language. We will find a person of mysterious origin when we leave here. The Outpost will not be deserted when we find it."

When Jin sorted this out he was a bit startled. "The Outpost was—I mean, will not be deserted when you find it? It seems that from both your point of view and mine, the origin of this place is a mystery."

"This is the natural course of things," said the alien Speaker. "You will see a highly improbable decrease in entropy, yet, as far as I am concerned, the pencil simply falls." The alien stretched out one arm and a small instrument jumped from the floor into his hand. He put the thing in his pocket. "Perhaps they are of the same constitution, your soul and mine. We know little about the interaction of matter and souls. It is possible that the direction in which the associated souls are traveling is always the orientation for which matter becomes more disorganized."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The alien's eyes rolled upward as he seemed to consider something. Recovering from the surprising demonstration, Jin replied, "So you say that whether they go one way or the other in time, souls are the same. And the direction of increasing entropy determines the point of view of the souls, or maybe—" He tried to think of a word for "vice versa."

"I am Ksaldim. Your unfamiliar word puzzles me."

"What?" Jinma used his native tongue.

"Salutations."

"Salutations," Jinma called as Ksaldim backed out of the room.

In time, Jin became adept at the subtle art of time-reversible dialogue. He remembered to frown when interrupted so that the other would know when to stop talking, and he learned to stop talking when the alien Speaker frowned. He learned merely to react to what was said, and not ask questions.

All conversations were recorded for later analysis. The humans hoped to learn all they could from what the aliens had to say, and over the centuries they had pored over nearly a million such dialogues.

In his role as one of the Speakers, Jin grew used to a routine. He would enter the conference room at the appointed time, to find an alien Speaker "waiting." They would talk about whatever came to mind until the alien "left."

In his spare time, Jin experimented with zero-g pinball in a room where the station's artificial gravity could be turned off. (The strength of this field was a bit less than Jin had known on Atlantis, but a bit more than he had been used to on the *Middle Earth*.) He played chess. (Not with the aliens, though. They had learned the game but didn't know of it anymore. Even if they could play it, it would be impossible for opponents whose memories intersect only in the instantaneous now to play a normal game.)

"We will leave soon, and we intend to stay here a long time," said Ksaldim.

"I hope that when you arrived here you had learned as much from us as we have learned from you," Jin replied.

"He refuses to tell us how he got here, though. He is a very friendly and talkative person, the stranger. We call him He-who-will-be-born-with-no-name, as I will be saying."

"You have told me of this stranger. His presence is a quite interesting puzzle. I hope that when you leave, we will stay until we learn the stranger's secret."

"—is what we call him. Though he is of our race, we will have to teach the stranger everything. He will know nothing of our ways when we find the stranger."

Jin was still thinking about his own statement. He was uneasy about the fact that the aliens were leaving, since that would make him a specialist in an obsolete language. Perhaps the presence of one last alien on the other side would give him an excuse to continue in the one profession he had ever had. "So the stranger is not of your culture—"

"Our race is not that old."

"Maybe the stranger belongs to a branch of your race that you do not know about. We humans have spread

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

through the galaxies only slightly slower than photons from a supernova. Those that remain on Earth, if it still exists, might be totally unrecognizable."

"As with the theory of evolution which you have explained to us, this theory of reincarnation has no predictive value."

"A widely accepted idea among humans, this reincarnation. But it is hardly the established fact that—"

"The stranger claims that souls can transfer from body to body, just as we may change uniforms."

"The stranger may have many sensible ideas."

"Salutations, Jinma Lor."

"Salutations, Ksaldim."

Jinma continued to have dreams. "This universe is dying. Release us," said the disembodied souls of the people he had known on Atlantis.

"You feel guilty about not being close to anyone on your homeworld," said the image of Elly-five which the station's computer constructed. "Now you'll never see them again."

"Had I been a different sort of person back home I might not be here now. I had some friends, but I couldn't share their interests. It gave us very little to talk about."

"Jin, you are the only person on the Outpost who still uses simulated personalities. You have not recovered well from your trip here."

"Why should I take my problems to real people? They have so little patience."

Elly-five turned away from him and seemed to think. Although Jin had looked for it, he had not yet detected any hint of shallowness in the computer's simulation.

Her hair had been brown for the last few years and was now long and curly. Her eyes—blue until recently—were now green. Today she wore a troubled countenance which made him feel guilty in spite of himself. She turned back to him.

"The people on the other side seem to know less than they used to, according to our analysis of the conversations. They will be leaving soon, and when they do, your people will want to leave. They long to carry their knowledge to some living world."

"I think we should stay and talk to the stranger, the one alien who will still be here when the others go. There may still be much more we can learn."

"It wouldn't be fair to keep so many people here to try to talk to one alien. There would not be enough work to keep everyone busy."

Jinma's face fell. He realized that what she said was sensible, that the other humans would think the same way. Yet he dreaded the idea of going out to some civilization where he would again feel next to useless. Here on the Outpost he had an important role, an occupation that had become part of his identity. He was a Speaker. He also had the freedom to do more or less as he pleased with the rest of his time. Both of these things could change on a world like the one he had come from.

"I'm going to stay when the others leave," he said.

"That's what I was afraid you would say," replied Elly-five.

"Hopefully, in your past, I have

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

learned the words to describe our new process. We will soon invent a more efficient tachyon engine. That word I do not know."

"You mean the force field coupling process," said Jin. "You described your tachyon engines to us long ago, and recently we suggested improvements." Jin noticed that Ksaldim's features took on an expression he had never seen before. His forehead ridges contorted and his eyebrows straightened into a horizontal line. Making an inspired guess as to what emotion this represented, Jin playfully pushed a pen out of his sleeve pocket. It fell to the floor and bounced a couple of times.

Without frowning Ksaldim immediately "started" talking: "—the power control for the insulating field. Do not touch the triangular button on your right. This is the message he told us to give you, whoever you are. The stranger is beginning to learn our language."

"May you continue to have learned much from the stranger. I will try to talk with him when you leave. I am pleased to tell you that we have had a long and fruitful association for you to look forward to, Ksaldim."

"Salutations," said Ksaldim.

Jin responded with the same greeting as the alien Speaker retreated. After these conversations he often felt bewildered, but this time he felt a curious emptiness. "Yes, my friend, you have a lot to look forward to," he said.

.

From an observation dome on the Outpost Between Universes Jinma could see both the *Middle Earth* and the alien starship, the *Mitsngar*. To amuse himself he tried to imagine the activity in the giant tachyon engines of the two ships. Tachyons were the perfect reaction "mass" since at "near infinite" velocity they had negligible total energy yet significant momentum.

Very soon the engines in the human ship would be turned on and a stream of tachyons would exit, causing the ship to move in the other direction. The engines in the *Mitsngar* would also be started just as a stream of free tachyons coincidentally impinged upon them, and the second ship too would move. After they were underway for a while a careful observer on the Outpost would have to conclude that *both* ships were receiving free tachyons. Jin reflected on the usefulness of the language which the aliens had taught his human predecessors many centuries ago, in which "depending on one's point of view" was one syllable: "Peep."

The *Mitsngar* began to drift away, slowly accelerating. Soon the *Middle Earth* began to move in a parallel but opposite direction. Jinma watched until both ships were out of sight.

"No!" shouted Jin. He sprang from his bunk. The dream images were purged by the metallic reality of his cubicle. "May the city cave in on my head! Now that it's too late to leave, they've told me what they need me to do." Trying to sort out his thoughts, he sat back down on the bed. For the first time in his life Jinma Lor knew utter loneliness. He was at the mercy of the beings who inhabited his nightmares.

He could put himself to sleep. The human personnel of the Outpost had urged, no, ordered him to do so before they departed. But to sleep—and then

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

maybe to dream? To dream endlessly; to be trapped with these ghosts (who would probably not take his decision *stoically*) *until another ship arrived* and someone revived him? What if they never came?

Jinma did not sleep at all until he was completely exhausted.

"Elly, do you have a soul?"

"I have no existence apart from your reality. If I have a soul it must be part of yours."

"I don't understand. If I were no longer here what would happen to you?"

"I would live on in your memories."

Neither one spoke for a while. He noticed that today she had brown eyes, long straight hair, and wore a reflective metallic gown. She broke the silence.

"So go do what you have to do."

"But I need to be able to talk to you. I need to see you."

"You will outgrow some of your needs. Real people grow, and learn new needs."

He began to feel angry. Not knowing what to say, he got up and left the room.

"Goodbye, Jinma Lor," said the image.

Jin checked the conference room frequently, for he knew that there was one other person on the Outpost with him. The time came when he walked through the conference room door and, turning to his left to look through the window, saw an unconscious alien body on the other side.

He tried to tell if the alien was breathing, but he couldn't be sure. "I hope he's just unconscious," he said. Then he realized the significance of those words. If he did what certain entities wanted him to do—

It occurred to him then that he had no choice—or rather, that his correct choice was clear. The niche he had made for himself no longer suited him. If he did nothing about it he would arrive at the brink of insanity, just as he now stood on the brink of annihilation. But there was a way to make a fresh start, as well as to give the opportunity of rebirth to the people of his lost home.

The memory of his last dream came back to him. "There is no future in this universe, for us or for you," one of the ubiquitous images had said. "We could wait for the reversal of all souls when the universe collapses. Or, we could turn *now*. It is up to you."

Looking through the window into the antimatter world, a third of a meter from his world, Jin held his hand over the triangular button on his right. He felt a host of souls plug into his soul. He glanced at the alien body on the other side. "I really hope he has been conscious."

With his hand hovering over the power control button for the insulating force field, Jin wondered if he would ever reveal his true name to Ksaldim. "Midlask," he corrected himself. "Peep," said Jinma Lor as he depressed the triangular button.

As high-energy photons rushed headlong into the future, the souls of Jinma Lor and his friends and ancestors turned around in time. ■

● Only a mediocre person is always at his best.
W. Somerset Maugham

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The Alternate View

Data vs. Evidence in the Voodoo Sciences

Jerry Pournelle

"Literary intellectuals at one pole—at the other scientists . . . Between the two a gulf of mutual incomprehension."

Lord C. P. Snow: *The Two Cultures on the Scientific Revolution* [1959]

April is always hectic, what with taxes, but this month was moreso than usual. It began with the president's announcement of a new doctrine of strategic defense. Since Stefan Possony and I in 1969 developed the "Mutual Assured Survival" strategy as an alternative to McNamara's Mutual Assured Destruction (MAD), my phone began to ring.

April continued with a trip to Houston for the Second Annual L-5 Society Convention on Space Development. While I will loyally insist that the first convention (in Los Angeles) was slightly more enjoyable, I wouldn't fight for the point. The L-5 conventions have become my favorites, combining professional speakers, a chance to meet space industry movers and shakers, and the enthusiasm of fandom.

The Third Annual L-5 Convention will be in the Bay Area over the 1984 Easter weekend. Those interested should write the L-5 Society, 1060 E. Elm St., Tucson AZ 85719. If you've been putting off joining, now's a good time.

Scheduling was tight. I went directly from Houston to Ithaca, New York, where I delivered the C.P. Snow memorial lecture. From there to New York City, thence to Santa Cruz, for Contact!, the first annual convention combining anthropologists and science fiction writers. This month's column is extracted from the paper I presented there.

The late C. P. Snow was concerned that we were developing two powerful cultures, neither of which understood the other. He thought this very dangerous. Science, with its power over the physical world, is terrifying if not humanely controlled; humanists without science are helpless.

Examples of the consequences of this gap are not hard to find. Consider the following, which seems particularly relevant to science fiction readers.

From *Aviation Technical News* Volume IX, No. 5, published by Kerr Industrial Applications Center, Southeastern Oklahoma State University, for NASA's Technology Utilization Division. I give an EXACT quote:

LONG TIME PARKING

(From *Goddard News* Jan. 15, 1983, article by Charles Recknagel)

"The international Sun-Earth Explorer space craft has been parked 1.6 million km from the earth since 1978. During these approximately 5 years the space craft has been suspended at the point where the Earth's and the Sun's gravitational pull are equal, the point is

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

called the 'Liberation point.' After monitoring the charged particles eminating from the sun these many years, NASA decided in Oct. of 82 that they would crank up the satellite and use it for another purpose. The vehicle will swing within 100 km. of the moon's surface Dec. 23 of '83."

Note "Liberation Point," and the ludicrous orbital mechanics. One might almost excuse John Holt. Holt, a well-known educator and popular lecturer, author of *Why Children Fail; How Children Learn; What Do I Do Monday?*, chose to attack the concept of space colonies in a special issue of *CoEvolution Quarterly* (1977) devoted to the subject.

In a section entitled *Technical Debate* Holt says, "It seems that if L-5 is a point where the gravitational fields of earth and moon cancel each other out, any movement toward either earth or moon would lead to a further movement in that direction, there being no correcting or opposing force. The effect of these forces might be very slight, so that we could say of a 64 million ton cylinder that it would take many thousands or tens of thousands of years before it finally reached the earth. Still, it would be rather hard for those on earth."

Holt's argument against space colonies *sounds* scientific, and he probably believes he is being scientific. He also objects on "moral" grounds. When Tom Heppenheimer (certainly no soft-spoken advocate) says that Holt's arguments are "largely theological, reflecting bias or intuitive dislike, rather than any semblance of reasoned assessment," Holt replies:

"Again 'theological.' My objections to this project are variously, ethical, moral, philosophical, political, and economic. (I might add that, according to Gerald Piel, publisher of *Scientific American*, many scientists themselves oppose this project on moral grounds.) To call such objections 'theological' is imprecise, and has in it more than a whiff of Dr. Strangelove, or hard-nosed talk about 'megadeaths' or 'credible first strike capability' or 'acceptable risks.' And this may be the point to note that in all of O'Neill's and Heppenheimer's talk about space colonies there is no mention of risks. The risks would in fact be enormous. We have already lost three lives in space, and almost three more; the Russians have lost at least three. This is a death rate of something over 6%. But our ventures into space have been very modest, and surrounded by the most elaborate and expensive precautions. It seems altogether reasonable to assume that if we begin complicated mining and industrial operations on the moon, our casualty rate will be higher, perhaps much higher."

When Heppenheimer says that "It cannot be denied that large numbers of people will freely volunteer to live in space, even under austere conditions, when this becomes possible," Holt, in footnote #51 (of 56; his annotations are at least as long as Heppenheimer's text; Heppenheimer's text was itself a reply to an unannotated essay by Holt; this is known as the fairness doctrine) says:

"I do deny it—unless, of course, they have been told terrible lies about what life and work in space is really like. I expect that this will happen, and in fact is happening, and it is one of my ethical and moral reasons for opposing this project."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The interesting part is that we are listening to scientific-sounding nonsense from a man who does not know high school physics, and seems to know little of probability. He is, however, a "humanist," and thus should know human behavior. Yet I wonder, and call to evidence Shackleton's experience:

Ernest Shackleton was adjutant to the 1901 South Polar expedition. In 1900 he placed the following advertisement:

"MEN WANTED for Hazardous Journey. Small wages, bitter cold, long months of complete darkness, safe return doubtful. Honor and recognition in case of success." When he later reported on the advertisement's success, he said, "It seemed as though all the men in Great Britain were determined to accompany me, the response was so overwhelming."

I suspect I would have little difficulty recruiting qualified people for L-5 colonies, or indeed for an early lunar colony. Perhaps I'm wrong, but unlike Holt I have some evidence, and a smattering of data.

One may believe, as I do, that communications between scientists and non-scientists are in a sad state, and that this is a dangerous situation, without accepting C. P. Snow's picture as accurate. In my judgment the critical gap is not between "scientists" and "humanists," or between the sciences and the arts; the critical gap is between the so-called "social sciences" and everyone else.

This gap is exacerbated to the extent that either scientists or humanists believe there is scientific value in the "social sciences." In my judgment there is very little science in the "social sciences," and the use of the word "science" to describe these disciplines is generally either mendacious or farcical. Alas, it may also be tragic.

The real difference between arts and sciences is the difference between data and evidence; and the "social sciences" don't know the one from the other.

Imagine a spectrum. On one end you have science fiction. On the other end, you have hard science. What connects them is the nature of their subject matter.

The scientist requires hard facts. He needs data, ideally in the form of repeatable experiments. Data, to a scientist, is best generated in controlled experiments which can be described, published, and repeated.

The science fiction writer doesn't need any data. Certainly he must use

ART FORM	LEGAL	SCIENCE
Verisimilitude	Evidence	Data
Plausibility	Selection	All of the data
Argumentative	"Proof"	Validation

Figure One: From Verisimilitude to Data

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

some hard facts, because if *everything* is contrary to the reader's expectations, the work isn't going to be taken seriously: therefore, the science fiction writer makes use of "facts" not as data, but for verisimilitude and plausibility.

However, science fiction can't "prove" anything about the universe. We can speculate about it, we can try to expand people's horizons and stretch their imaginations; but we cannot, as science fiction writers, add to scientific knowledge, and this goes for "insights into the human condition" every whit as much as for contributions to nuclear physics.

Science fiction can't prove anything, because science fiction makes up its data. You can prove anything if you can make up your data.

Example: An earlier paper given at this very panel (at the Contact! symposium) uses the speech by the Army major in the film *Close Encounters* as an example of how the military thinks. This is patently absurd; it is at best evidence of Steve Spielberg's theory of how the military thinks, and it's probably not even useful for inferring that. Once again we have confusion of data, evidence, and plausibility.

The social scientist vaguely understands this fundamental principle, but doesn't really distinguish between data and evidence. Thus when Margaret Mead studied adolescence in Samoa, she was seeking evidence for a theory. Later writers, wishing to challenge the biggest name in the field, have done precisely the same thing. None of them seem interested in gathering data.

When this was put to Dr. Paul Bohanin, dean of the School of Social Sciences at the University of Southern California, he replied that Mead's value didn't lie in her data-gathering. She stretched imaginations and made people think larger thoughts.

Granted this may be true, but it seems more the job of a science fiction writer than a scientist.

As art forms, the social sciences may or may not be useful; but they are not content as art forms. Whenever anything of social significance happens—a riot, for example—the TV screens are filled with learned social scientists giving us both explanations and advice.

On their advice, for example, the police have been withdrawn from riot areas. The results have been uniformly disastrous, but this doesn't prevent the social scientists from advising the same remedy the next time.

You can prove anything if you make up your data. You can prove nearly anything if you are allowed to select your evidence and forget embarrassing facts.

The social sciences have made an art of forgetting embarrassing facts. If a fact doesn't fit the theory, leave the fact for another discipline. Sociology has nothing to learn from anthropology, which has nothing to learn from social psychology. None of these has anything to learn from the mathematics, physics, or chemistry departments.

The solution to C.P. Snow's dilemma seems clear. Scientists must learn something of the humanities. That, I think, is done rather more often than not. Scientists do read books. I have met the maniac scientist bent on discovery no matter the harm far more often in literature than in the laboratory.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Secondly, the humanists must learn something of science. This is less common, but it does happen. It isn't necessary that the humanist become a scientist, or even learn how to do science; it is necessary that he learn the principles of scientific reasoning.

I would be far more willing to believe that the two cultures could coexist, however, were it not for the contamination of the "social sciences," which pose as sciences to the humanists, and humanities to the scientists, but which are not in fact much good as either. The poet who believes he knows something of science having taken "Sosh 103" and "Ed Stat" is far more dangerous than ever he would have been if he had remained ignorant.

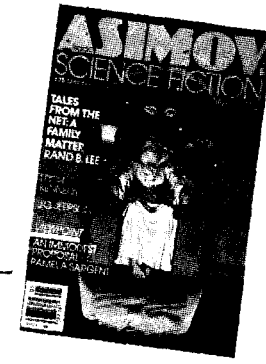
Meanwhile, novelists have as much right to be called "experts" on human behavior as any social scientist, which is to say we can learn as much about our fellow humans from a good novel as from a sociology treatise; and I know which I would rather read. Similarly, the poet may find beauty in the theory of probability, and will learn something of the difference between data and evidence while studying it; "Stat for Social Scientists" teaches nothing, and is dull in the bargain.

When the social scientists are challenged as unscientific, their usual plea is that their subject matter is very complex and thus the methodology of physical science won't work. This is an interesting argument, but it would carry more weight if students of social science knew something of physical science's methodologies. Granted that the "social sciences" have an intrinsically more difficult job; is this any reason to abandon the tools of science? ■

Dial TOLL-FREE
1-800-247-2160
(in Iowa 1-800-362-2860)

ASIMOV SCIENCE FICTION MAGAZINE

P.O. Box 1933
Marion, OH 43306



YES, Send me 12 issues for only $14.97. I save $6.03 off the regular newsstand price of $21.00.

☐ Bill me later, no need to send payment now.
☐ Payment enclosed ☐ Check here if this is a renewal of your current subscription

Name _____

Address _____ Apt. _____

City _____

State _____ Zip _____

Canadian orders add $3.00 (payment must accompany order)

Please allow 6 to 8 weeks for your first issue. D3NB1

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Their information proved accurate. Just after 2 A.M. they topped a ridge to see the Traveller below. The leader signaled and the others came up beside him to stare down at the huge vehicle, their breath rising in puffs.

When they were rested the leader waved again and the men fanned silently along the wooded slope. The Traveller was dark and silent, but a turret guard might be watching. When the others were well hidden the leader stepped onto the road.

He approached the Traveller slowly, openly, whistling softly. The mobile factory bulked higher and higher, almost to the dimensions of a government building. Its front tires rose ten feet above his head. Between them, at the front of the vehicle, a single light burned.

Evidently no one had witnessed his casual arrival. He pressed the call button. From the trees came the bird cry which meant his men were moving closer. He stamped in the cold, brushing snow from his coat.

At last the sloping door in the bulkhead slid open. Two men wearing Traveller badges jumped down, grimacing at the wind. "What do you want?" the larger demanded. "We're in transit to Vladivostok. Not in operation."

"My name's Kureshchev, Mikal Kureshchev." He unshouldered his pack. "Will you give me a ride to Kavalerovo? My brother Andrei is on your crew." There was a pause; he held his breath.

The men conferred. "Wait here," said his challenger, a little less roughly, and went back into the Traveller. The second stayed, watchful.

Mikal pulled a battered box of Sobranies from his pack and offered it, then took one himself. "I have no matches," he said casually. The guard dug into his coat.

The revolver was out of Mikal's pack before the other looked up. "Silence," Mikal ordered, motioning away from the door. His men were filtering from the trees. When the second crewman returned smiling, they were waiting.

"They were Russian, I'm sure of it," said Zossima in a low voice. "The leader had an accent like yours, Andrei. I listened to him ordering those others. There must be two dozen of them." He cradled his right wrist. The hijackers had knocked his pistol away before he could use it, when he drew it in reflex panic at sight of Mikal's men.

The five men of the Traveller's skeleton crew eyed each other across the empty table. The dim, low-ceilinged cafeteria was damp and cold. A single light burned over the exit door. Outside, Andrei knew, were men with guns.

"I tell you, Mikal's at the institute in Vladivostok," he repeated, hunching deeper into his jacket.

Gavriil, his closest friend among the crew, slapped Andrei's shoulder. "So you believe," he said. "Listen, Andrei. We trust you, I think," he looked around the table, then nodded, "but we don't believe you can predict all the actions of a grown brother. Now tell us this. Did he know our schedule?"

Unwillingly Andrei said, "I gave it to him last autumn, when I visited him at school."

"Does he have red hair? I got a good look at this fellow while he was holding

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a gun on me," put in Shinkarev, who had been silent since recounting the ruse of the matches.

They were interrupted by the creak of the cafeteria door. Three hijackers entered, two carrying automatic rifles. These were trained on the Traveller crew while the third man pushed through empty tables to Andrei. Before the other crew members could react, he was jerked to his feet and forced to the exit.

Two more men were waiting outside. The gunmen stayed to guard the door. Andrei's captors frog-marched him swiftly to the ramp and up to the next level.

The metal hallways were silent. Andrei flashed glances into the dark production and assembly rooms, but saw no one. The equipment looked untouched. So did the classrooms on the next level.

Now his guards took a familiar route. Three doors stood open in the crew hallway, revealing unmade beds. The fourth room was his own. Inside, chewing on a hunk of dark bread, was Mikal.

Anger and a stabbing sense of betrayal gave Andrei strength. He twisted away from the restraining arms and into the bunkroom, slamming and bolting the door. Then he swung around. The urge was in him to attack. Mikal had frozen with the bread halfway to his mouth.

The door shuddered under blows and shouts. "Tell them to go away," Andrei growled.

His rage must have been visible. Mikal was pale below his red curls. He called, "Vadim! It's all right! We're talking," and the pounding stopped. They heard the men retreat, muttering.

Mikal backed a step and said urgently, "I told them to be rough when they took you from the others. It will help your story when the authorities investigate—"

"Shut your mouth!" There was not enough room to breathe. He knocked Mikal onto the rumpled bunk and shoved the little table with his chess board and pipe into a corner. The reading chair he slammed against the back wall. Then he paced, holding on to the anger.

"Zossima—the man your gang jumped outside—told us you were the leader. I swore it couldn't be you, you were studying in Vladivostok. I had them convinced some impostor had found out your name and mine, and lied his way inside." He drew a breath. "And now here you are. I want to knock your head off. What insane urge drove you to hijack a Traveller?"

"We need it in Ol'ga."

This disclosure meant nothing. Andrei slammed his fist against the ceiling. "*Why?* It's empty. We distributed every computer terminal we built, you fool. We're scheduled to load up with new parts tomorrow in Nakhodka and to pick up the instructors in Vladivostok on Wednesday. Two days after that we're due in Khabarovsk for the spring. If we're late anywhere the collective will call out every soldier on the coast." He spread his hands, trying to sound reasonable. "How far do you think you'll get with this hulk? Have you thought about trying to hide it?"

He had kept his distance, but Mikal was breathing fast. "Andrei, listen," he said. "We're meeting a ship in Ol'ga, from America. There'll be 500 people on board who need to get to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Nakhodka unseen. We'll turn the Traveller back to you there, somewhere along the railway line." His fists clenched the bunk and he eyed Andrei as if expecting an explosion.

Americans? Landing secretly in Russia . . . Realization struck him, and disbelief: *was* this his brother? Andrei sank into his reading chair.

"The People's Trade?" he asked, and at Mikal's quick nod, "You're . . . a member of Samizdat?"

"Since the beginning. That's why I'll be leaving with the ship." Mikal wiped his palms along the mattress. "I'm almost certain the KGB suspects my affiliation, and every one of us will be under sentence once Moscow realizes the trade has truly started. A few of my men think they're still uncompromised. They'll stick with the Americans: get them onto trains in Nakhodka, then disperse. The rest of us—most of us—are leaving on the ships."

Andrei had nothing to say. His brother smiled tightly. "Did you never guess? We talked about Samizdat often enough, and the trade, too."

"And I called it ridiculous, a scheme that could never succeed."

"We'll see, won't we? Five ships are landing tonight at various ports, if all goes well; and we're bringing the Americans through in other ways, too. Where is your next checkpoint?" he asked abruptly. "We want to take the coastal road from Ol'ga to Nakhodka if we can—it's more direct and not as well travelled."

There was a vehicle identicard scanner at Arsenjev. The Traveller's failure to pass it would appear on its computerized record, though probably not be noted by a human operator for several hours. No need to reveal all that, Andrei thought; perhaps he could defuse the mad plan here and now. He told Mikal about the checkpoint, adding, "We're expected before noon tomorrow. If we don't arrive they'll start radioing all the way back to Tet'uche."

Mikal cursed. "Then we'll have to double back from Ol'ga. That means an extra hour." He jumped up. "Come on. You have to control the Traveller for us."

The extent of the hijacking struck Andrei at last. He tried to laugh; the sound was nearer a choke. "Incredible! Divert a valuable piece of national capital to aid a cause the Party denounced a year ago? I'd be first in line for the new pogrom."

Mikal had the door open. The hallway light outlined his slight figure. "It's either help us," he said, turning, "or answer to the collective for a carelessly damaged piece of national capital. The Traveller's moving."

Andrei kicked over the table and followed.

Under his hands the Traveller made a steady forty kilometers an hour. The steepest slopes of the Sikhota Alin were behind them now. They had left the major highway just before Kavalerovo and were lurching through conifer forest, heading southeast. The Traveller's powerful headlamps flooded the empty road, but Andrei couldn't avoid all the holes and rises that canted them this way and that. He wondered what the prisoners in the cafeteria were imagining.

He slumped over the control board, staring down into the black forest, trying

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to remember what he'd ever learned about Ol'ga. It was a tiny place, but had a productive iron mine, which was no doubt why this road enjoyed its good repair. And he knew it had a small but deep natural harbor, free from ice almost year-round.

Beside him Mikal smoked cigarette after cigarette, checking his watch frequently and using the intercom to relay Andrei's instructions to his substitute crew. They had had nothing to say for some time; Andrei was tired and still angry at the part he was being forced to play, Mikal presumably was occupied with thoughts of his ridiculous escape. Their reflections jogged in the window that circled the turret.

The Traveller crossed a frozen stream on a sturdy but narrow bridge, then settled onto a flat section of road. Andrei stretched. Merely in order to keep awake, he told himself, he turned to Mikal.

"I first heard about the trade in Blagoveshchensk last summer," he said. "It was the day the new Five-Year National Defense Plan was announced, with the new austerity measures. Some drinker was sounding off outside the *Izvestia* office, waving the paper and yelling something about how things would change when the People's Trade started. His wife and some other people were trying to shut him up, drag him away."

"A fool." Mikal frowned. "He could have destroyed a delicate network. Ten Americans would be homeless tomorrow if it had slipped out that Blagoveshchensk was planning to foster them." Now that Andrei had broken the silence, he seemed eager to talk. "Moscow has heard about the trade, you know that, but we kept the details a secret. Even the families who will be welcomers don't know the Americans arrive tonight. You see, Andrei, all we need to do at first is get them settled secretly; then the towns will absorb them, keep the regional authorities confused . . ."

His brother's words and the People's Trade were a vast, meaningless cipher. Andrei gulped viciously at the tea Mikal's cohorts had provided. "It's a crazy plan!" he interrupted. "How can you believe it will work?"

"How can we know that it will? The point is, it's a new idea. It's an alternative to all the saber-rattling. Lenin said, a long time ago, 'We must help the people to intervene in matters of war and peace.' Well, that's exactly what Samizdat is doing." He lit another cigarette, eyes on the passing treetops.

The mention of Lenin shook Andrei. It forced him to remember his brother's studiousness in school, and his fascination with governance. At one time he had talked of working his way up within the Party. Now Mikal shook out the match and spoke again.

"Do you remember, Andrei, the films we used to see in school about what to do in case of nuclear attack? How families, even whole apartment blocks, could live for months in underground shelters that were properly shielded and supplied? It seemed like a game to us then, when we were children. I remember digging a cave in a hillside with my friends and pretending it was our bomb shelter. We sneaked bread and sausages from home and hid them inside, but they were always rotten when we went back. One day we de-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

cided it was no fun anymore and pretended to bomb it. We jumped up and down on top of it until it collapsed, and then we went on to a new game.

"But the Kremlin and Washington kept right on playing. Soon after I joined the Young Communists—you remember?—it was decided that all Komsomol members were to volunteer for Collective Defense. For a year we trained as shelter aides. We spent hours in those underground boxes. It's no way to live—and what would be waiting, when the survivors crawled out? I decided it would be better to die under the bombs, if the war came.

"Andrei, that damned missile-dance has been going on for so long that everyone's forgotten what life was like, before we had the world to worry about." He fell silent.

Andrei had glimpsed a familiar glow through the trees, the orange of an ID checkpoint. Suddenly afraid, he geared down the Traveller as Mikal spoke into the intercom. They halted in front of the barricade. Andrei flipped the EXIT toggle and in a minute one of Mikal's men emerged and ran through the falling snow to the scanner plate.

Andrei said, "You can't use the Traveller's identicard. They'd spot us off-route immediately."

"We brought our own." Mikal was leaning forward to the window. "It's a collective car registered in Almet. Nothing to draw attention. We were expecting this."

The man below ran back to the Traveller and the green light reappeared on Andrei's panel as the outer door shut. The barricade rose. He had to angle to the left to clear it. They heard the snap of timber as the Traveller lurched back onto the road.

Now the marked road to the Ol'ga mine appeared on their right. Deep ruts led into the forest. The Traveller stayed with the highway. Still they met no one. It was nearly 5 A.M.

Andrei's breathing returned to normal. Evidently this plan had been carefully researched. "I still don't understand why you're going to America," he told Mikal, unable to let the matter alone. "You say the KGB has no proof you're with Samizdat. With your education, you'd have a good life here. Why not volunteer for the Traveller project? It's been top priority in Moscow ever since the Americans finished their national computer linkup. For ours we need hardware, first; and then we've got to educate the people to use it. The project needs planners, overseers, instructors, you name it! I know I'm just a specialized truck driver, but you could—"

Mikal had been listening, but now he shook his head. "Hah! Truck drivers aren't named Hero of Labor. But as for the trade . . . *I can't back out now.* None of us will. It's come too far."

They stared at each other. Andrei realized he had been wheedling. He turned away and hardened his voice.

"So your heroic Samizdat, and a few radical Americans, will change everything, eh?"

"More than a few people are involved here," Mikal answered steadily. "When I went away to the university, I met students from all over the Respublik —and the satellite countries—who felt as I did. We spent hours discussing the world situation. Did people in America feel threatened by total destruction, we

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

wondered? Was every American a bloodsucking capitalist ready to sacrifice civilization for his right to private ownership, or was the subject open for discussion—if anyone ever allowed us to discuss it? That was the major problem in settling our differences with the Americans, we decided: we—the citizens, the common people—aren't allowed simply to talk, even meet under non-official conditions. That's when we decided to kidnap some tourists."

Andrei had forgotten about the kidnappings. He felt guiltily fascinated. He had heard the story, of course: details of the events three years earlier had been suppressed, but the tale was too bizarre to die. Three busloads of American tourists—two in Leningrad, one in Moscow—had been spirited away overnight, their Intourist guides gagged, hooded, and tied while the Americans talked with their captors. All were released unharmed. Samizdat was briefly mentioned in *Pravda* and flatly condemned, but no arrests were reported.

Andrei felt suddenly as if he were sitting with a stranger. It had always been a little that way with Mikal, who had been born when Andrei was fourteen; there was love between them, but their minds had grown apart.

"I remember being confused by the kidnappings," he said slowly. "We never heard *why* Samizdat took the Americans. There was nothing in the papers, of course."

"Of course. I'll tell you. We were explaining the trade and setting up lines of communication. The Americans were terrified, at first, but some of them spoke Russian and a number of us spoke English, so we were able to communicate. And they listened! We made our plans. When we let them go we warned them they would be interrogated. We never heard exactly what the KGB extracted, but it couldn't have been much; we survived to go on arranging the trade."

"Will the president's son land at Ol'ga?"

"What?" Mikal was staring.

Andrei reddened. "We heard that the American president's youngest son was a volunteer in the trade. But then, I heard a lot of rumors. I suppose they can't all be true."

Mikal nodded, smiling. "I didn't know about that one. But you're right —we started dozens of stories, to keep the KGB busy. From what I've heard, they did the same in America."

"The Harlem Globetrotters aren't coming, either?"

Mikal laughed.

Fifteen kilometers nearer to Ol'ga they saw headlights approach, then pull into the woods. "Keep going," Mikal told him. They drew alongside three truckloads of miners, the men silently staring. One raised a hand in salute. "We have many friends in Ol'ga," Mikal said softly. "If the war started, they'd be vulnerable. Vladivostok is a major target."

Now they came upon wooden sheds, deserted and dark in the false dawn. The road widened and turned to follow the coastline. Ahead they could see the harbor and the town beyond.

Mikal spoke to his men, alerting them. Then he stretched and rubbed his fists against his eyes. It was a childlike

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

gesture. Andrei remembered the little brother.

"Where will you live?" he asked, very low.

"With the cousin of a man I met in the Moscow kidnapping." The shore was gray in the morning. Mikal leaned toward the window. "Six of us are going to Erie, Pennsylvania—" he pronounced the foreign words carefully —"and we will have jobs and access to the computer link. What more can citizens ask?

"And I do not believe the government will throw us out. The free press is waiting for us. We'll give them hundreds of interviews—thousands, if they like. We'll make this a matter of national pride, on both sides."

They reached a crossroads. A little convoy of nondescript trucks, looking like commune vehicles journeying to the city, broke to let the Traveller pass. But the cargo of every truck was men. —And women, Andrei saw: more and more pale, scarved faces craned to look up at the turret. The trucks were stopping to unload at the harbor, then leaving the way they had come.

The people were gathering at one of the huge cylindrical Gosplan USSR tanks that edged the harbor. The sight brought memory: Ol'ga was the terminus of the natural gas pipeline from Yakutia and center of the profitable LNG trade with Japan. Japanese tankers plied a guarded route across the Sea of Japan continuously. Andrei could make out red and white flags on two big ships farther down the harbor.

Now they could see a similar battered tanker easing in to the dock nearest the Traveller. It also flew a Japanese flag, but as Mikal leaped up for a better view, red, white, and blue bulbs burst on around the rail. Silhouetted on the deck were the figures of many people.

They could hear the excited voices of Samizdat men on the turret catwalk. Mikal grasped Andrei's shoulder as the Traveller came to a halt.

"Look, Andrei! I helped to imagine the trade, but I was afraid to imagine that ship. The Americans trusted us! Surely this means a change is coming. . . ."

His voice faded. Andrei saw him already halfway to America, already on the ship with the hundreds who were now pressing to the shore, boxes and packs on their backs. Behind him, he heard the turret door snick open.

Mikal bent to face him. "We're going to tie you now," he said softly, as strong arms gripped Andrei. "If anything goes wrong and Vadim doesn't return, you can always say you were drugged and forced to obey. If things go well . . . remember that no one else on the Traveller knows why you were sidetracked, or even that you came to Ol'ga." He tucked an envelope into Andrei's jacket. "My full confession, absolving you of complicity. Give it to the KGB. I don't think they'll bother to come after me."

Andrei's arms and legs were immobile. The world was taking his brother. "Mikal!" he cried, struggling, and his brother embraced him swiftly, hard. And then he was gone. ■

● Progress is not an accident, but a necessity.
Herbert Spencer

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ON GAMING

(continued from page 75)

game; a pad of 50 personal data sheets to keep track of your current levels of personal abilities; and one large sheet with the maps needed for each of the three adventures.

The three adventures provided with the game are very creative, and show the thinking that went into *Timeship*. The shortest adventure is called "Murder at the End of Time," and has your party traveling to August 25,600,000,000 A.D., to try and solve the mystery surrounding the first murder committed in over three million years. The adventure is bizarre and clever.

The second adventure is more involved, and concerns "The Destruction of Gomorrah," on May 22, 1979 B.C. Arriving on a simple time-traveler's holiday, you must stop the destruction of the city or be obliterated with it.

The last, and most complicated, adventure is a long and detailed attempt to "Assassinate the Fuehrer." To prevent World War III from beginning on June 7, 1956, you must prevent Adolf Hitler from escaping his bunker in besieged Berlin in 1945 and reaching Argentina. Your mission is to find Hitler, dispose of him, make it look like suicide, and escape the SS and the battle engulfing the city. Good luck!

The game does allow some fictional abilities, such as telepathy, precognition, shape-changing, etc. But even these must be used with limitations so that a player character doesn't end up becoming a superhero.

Timeship is a really different type of role-playing game. If you're tired of slashing orcs or blasting into hyperspace, try *Timeship* for a refreshing change. ■

IN TIMES TO COME

● Next month's cover story (which, by the way, marks artist Tom Kidd's debut in *Analog*) is "Deathwomb," by Poul Anderson. What may surprise you is that this is a berserker story, and everybody knows the berserkers—those spacefaring machines programmed to destroy life wherever they find it—are Fred Saberhagen's invention and literary property. But it's all right: the berserkers are one of those ideas that suggest virtually unlimited possibilities, and Saberhagen himself has turned several topnotch writers loose with it to make of it what they will. Anderson, as you might expect, has managed to find a few new angles, and woven them into a tale set against the kind of richly exotic background he's famous for.

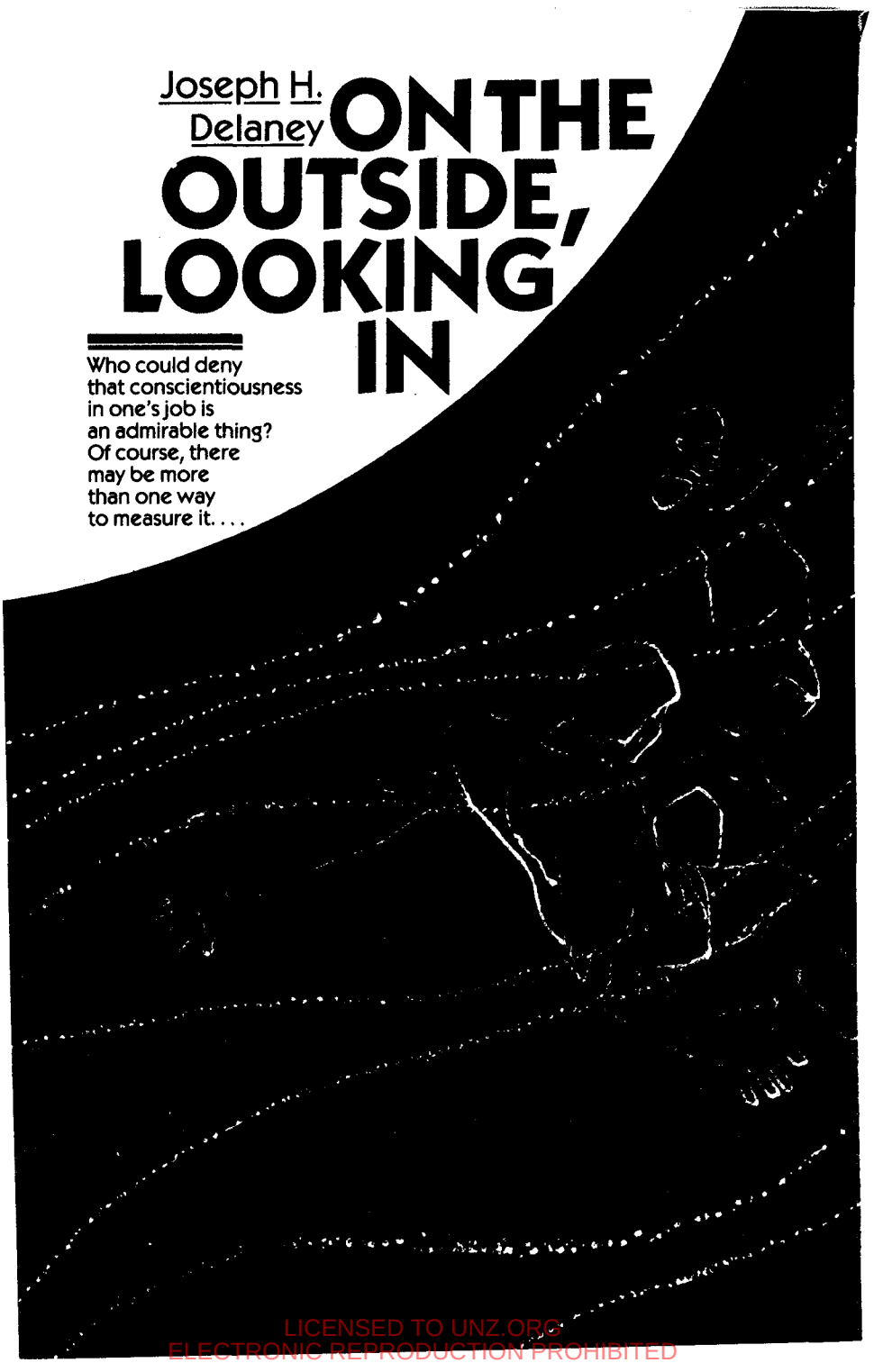
It's a little early to try to say very definitely what else will be in the November issue, but I'm reasonably sure of a story by David Brin and an article on "Mining the Moon" by Stephen L. Gillett, Ph.D.—and quite certain of Part II of Larry Niven's *The Integral Trees*.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Joseph H. Delaney

ON THE OUTSIDE, LOOKING IN

Who could deny that conscientiousness in one's job is an admirable thing? Of course, there may be more than one way to measure it. . . .



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"There you are, sir. Just as you like it: sweet, hot, and dark. Now, will there be anything else?"

Claud peeked around page 14 of his *Wall Street Journal* and said, "No thank you, Miss Parsons." Mentally, he added, *For now*. Actually he'd had her under observation ever since she'd entered his office, and farther down the line he did have plans for her. But that would be after he had enough on her to keep her quiet. With her type you had to be careful.

He waited until she'd wiggled out the door before lifting the coffee to his lips and taking a sip. *Yuk*—too sweet. She'd overdone it. He took one more glance at the door and read with pride the words that appeared there: INTERNAL REVENUE SERVICE—CLAUD KUKENSCHABE, REGIONAL DIRECTOR. In the week they'd been there he must have read them ten thousand times to reassure himself, so he could believe his promotion was real.

And each time he took them away with a feeling of gladness in his heart and pride in his smile. He was nearing the top of the heap after climbing steadily for eighteen years. Someday, if this goes on, he thought, the word "Regional" will come off. Washington, with all its opportunities, was only a little way down the road.

He opened the paper again. Good news; he'd been smart to buy that one. "Navy awards F-28 contract to International Arquebus & Arbalest." Good old Clydesdale; he'd come through with advance information. Claud hadn't even had to hint at an audit. All he'd had to do was call the old goat and say hello, and bring him up to date on what he'd been doing since they'd left school twenty years before. "Let's see, that's fifteen hundred shares at 14 ⅛; figure a point and a half, two points by noon; then sell." Two maybe three thousand more into his account at the National Bank of Tonga, and nobody'd ever know.

"Burkey Declines Nobel Prize." That caught his interest right away.

"*Stockholm:* Sources close to the Nobel Prize committee announced today that physicist Martin Burkey, a unanimously chosen winner acclaimed for his work in particle physics, has declined to accept either the award or the prize money. Burkey told reporters that his actions were in response to what he called 'confiscatory policies' by U.S. taxing bodies, and that as far as he was concerned the money could stay in Sweden.

"A long-time dissident, Burkey announced that he planned shortly to take on the Internal Revenue Service, as he has local taxing authorities in his home state of Texas."

Claud's hand chose that moment to slip. His elbow came down on the rim of the styrofoam cup, which broke open, then tipped. Sticky, steaming-hot coffee poured across the top of his desk and ran off onto his lap. Claud screamed as it penetrated his double knit trousers and spread out through his shorts.

Miss Parsons was the first one in the door. She stood and stared a moment. Claud had, in the meantime, leaped from his chair, and the coffee was soaking into the tan carpet, staining it a dark brown.

"I'll get some wet towels from the ladies' room, Mr. K. You wait right there. I won't be long." She turned to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

shoo several other curious onlookers out of the room.

As soon as she was back Claud grabbed a wet towel and wiped his hands, expecting she'd take care of the desk. She went to work on the pants instead, taking embarrassingly long to do it. Claud was grateful for the frosted glass.

"That's enough, Miss Parsons. I'll have to go home and change anyway. See if you can do anything about the carpet."

Miss Parsons went to work on that, too, providing Claud's eyes with a feast. "What happened, Mr. K? Was there something wrong with the cup?"

"No, no. The cup was fine. I was distracted and put my elbow in it."

She looked up at him and smiled understandingly, and it was then he felt constrained to explain further. His dignity demanded it.

"You know," he told her, "we're the least appreciated of anybody in government. It all starts with us. If it wasn't for us and what we do, the country wouldn't be able to operate, not even for a minute. Yet we have to take abuse from everybody. I'm getting a little sick of it."

"Oh, I know," Miss Parsons drawled, her voice as syrupy-sweet as the coffee she was mopping. "People say to me, 'How can you stand working for them?' And I tell them what you just said." She turned slightly to give a Claud a better look at more of what he was missing, then rose to her full and voluptuous five-foot-four. "Would you like to take a chance on another cup?"

"No. No thanks. I'm going to go now, and change. While I'm gone I'd like you to pull our file on—uh—" he glanced again at the sodden paper —"Martin Burkey."

"Yes sir. It'll be here. And may I say how sorry I am about this. I hope it doesn't hurt too bad."

"It doesn't hurt at all now, Miss Parsons. You've done a splendid job. I'll be back in an hour."

Claud walked out of the office carrying his jacket in front of him and feeling like a fool in front of his subordinates. He went to his car, parked now in his new and honored space by the back door, and drove to his apartment down on Town Lake to change clothes.

"By God," he thought, as he drove. "I'm right. We do deserve more credit than we get. A guy like Burkey'd be the perfect example to point that up, and I'm just the man to do it."

By the time he'd reached his apartment he'd made up his mind that he'd get the physicist for Uncle, and maybe a promotion for himself. It'd be poetic justice after what he'd done to Claud.

By the time he'd returned to the office Claud was convinced that half the country's problems were created by people like Burkey, and that it was high time something was done about it.

Miss Parsons met him at the door. She held a manila folder in her hand. It looked thick. "Just put it on my desk, please, Miss Parsons, and get me some more coffee. Not quite so much sugar this time."

He sat down and opened the folder. And was shocked. No wonder his predecessor took early retirement. If all their other sensitive files were like this, he would have been done anyway. Claud leafed through it, getting more and more

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

irritated with every page. Finally he snapped it closed, jabbed the intercom button, and yelled for Miss Parsons.

Her response was immediate. "Yes, Mr. K."

"Come in here," he said.

She entered a moment later, looking apprehensive.

"Sorry to be so gruff," he said. "And no, I'm not upset with you. Tell me, do we still have an enforcement agent named Bradley?"

"Yes sir, but he'd be out in the field somewhere. Do you want to see him?"

"I do indeed. Find him and tell him to get in here, immediately if not sooner. He's to drop anything else he's doing."

"Yes sir." She turned and walked out the door, carefully closing it behind her.

Claud leaned back in the chair and put his feet up on the desk, careful to keep them off the center where the glass might break. He'd do a real job on Burkey. That he promised himself.

There was a knock at the door.

"Come in," said Claud, who could see Miss Parsons's silhouette through the glass.

"Mr. Bradley's on his way in from Laredo right now. He should be here right after lunch. Will you need me to take notes?"

"I haven't decided. Let me know when he gets here."

James Bradley was lean, in his early thirties, and slick-bald. He had a feral look about him that even Claud didn't like. He was the kind of person, Claud felt, whom you'd best keep in plain sight. IRS was stuffed to the gunwales with thousands just like him.

"Come in, Bradley. Sit down."

Bradley did. And he sat there, mutely gazing at a spot on the wall behind Claud.

It was disconcerting, but Claud broke up the gesture by tossing Burkey's file within Bradley's reach.

Bradley picked it up and looked at it. His face flushed. "Burkey," he said.

"Burkey. You were the enforcement agent on this file, Bradley. And there's a lot wrong with it. Do you realize this guy hasn't paid a cent in taxes in over five years?"

"Yes."

"You do, huh. Then why hasn't he been prosecuted?"

"Because as far as we can tell he hasn't broken the law. He's filed returns for every year. He just won't pay."

"Your job is to make him pay. How come the returns aren't in this file anyhow?"

"There's another file, the auditor's file. They're in there." Bradley said it as if Claud should have known.

And he was right; Claud should have known. But he had no intention of admitting that. He pushed the phone to Bradley. "Call whoever you need to. Commandeer some people to help, but get Burkey. We're making him our number-one priority. Understand?"

"Yes sir." Bradley dialed a three-digit number and told the party who answered to get the Burkey auditor's file to the Chief's office. When he was finished he pushed the phone back.

"Mr. Kukenschabe, there's something you should know."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"What's that?" Claud asked, amazed that Bradley was showing such gall.

"Burkey's got protection."

"Protection? From who? On what authority? He's a tax-payer like you and I are. He pays his full share, like you and I do. Nobody's got any right to protection."

By this time Bradley was starting to squirm. "I quite agree, Chief. And, as you can see, I did try to build a case against him. I even did a couple of office audits. I was told to lay off."

"By who?"

"They told me not to tell anybody."

"What! Bradley, I'm giving you a direct order. I'm your superior. I'm the only one who can tell you what to do. Now, you answer me; who told you to lay off?"

"The Secretary of the Treasury."

"Fothergill?"

"Him, yes. And before that Hensley; and before that, when I first started on Burkey, it was John Sargianus."

"Why?"

"That's another thing they told me not to tell, assuming I myself guessed why."

"Have you?"

"I think so."

"Then let's have it."

"It's just my theory."

"I don't care whose theory it is: tell me."

"Burkey's crazier'n a bedbug, Chief. You never can tell what he might do. For instance, he used his own blood for ink on his tax returns. He calls us the 'Infernal Revenue Service,' and that's just a couple of examples. However, in certain areas he does seem to possess true genius. It'd be my guess that the military put the arm on us. They're supposed to be awfully close to operational with particle-beam weapons, death rays —and Burkey's the world's foremost authority in that area."

"But he's like you say: a nut. Besides, he publishes all his stuff. That's what won him the Nobel Prize . . ."

"Probably the harmless part of it. Physics is a big field. Anyway, he seems to have clout."

Claud did not miss the fact of Bradley's insolence in cutting him off in midsentence, but that was the sort of thing he could take care of later. Right now he had a paramount task. "What's this, Bradley?"

There was an envelope in the auditor's file with a ribbon around it.

"That's all the photos and confidential reports. We had an undercover team on it before the Secretary jumped us. Uh, Chief, I wouldn't break that seal if I were you."

"Too late now, Bradley." The envelope was open. Claud took out the photos first. "Some house. Is it Burkey's?"

"That's what we thought. He claimed not. At the time, title was in Winthrop Grumley. Grumley's big in chips. Microchips, that is, and Burkey probably did some work for him. Later, after Grumley's daughter moved in with Burkey, the old man put it into a trust with her as the beneficiary. We couldn't prove either taxable income or taxable gift."

"I see. Does he still live there?"

"No. In fact, as far as we can tell he doesn't see Faith Grumley anymore, either. He's got a place out in the country. He's living in Comfort."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"No doubt. You can do that easy enough if you don't pay taxes."

"No, Chief. That's the name of the town: Comfort. It's southwest of San Antonio. The information in that file is at least three years old, but I've kept track of him in the meantime."

"You're a good man, Bradley. What else can you tell me about him?"

"Well, the Nobel Prize thing you know about, but that's not the craziest thing he's done. Not nearly. He seems to have the IRS Code pretty well figured out, and everything he does is just barely outside the bounds of culpability.

"For instance, we know he takes consultation jobs. Somebody'll approach him, give him a problem, and offer him the use of research facilities while he works on it. Burkey winds up with three slops and a flop and the use of a car, or whatever else he wants—but the story we get when we ask is that he's friends with the owner and is just borrowing.

"We've turned that around a couple of times because we can prove some of the research Burkey does in return has commercial value. We've even collected nominal amounts of gift tax from some of these manufacturers, but it's peanuts compared to what he should be paying."

"What about his government work?"

"Same things, as far as I can tell. Of course, Department of Defense records aren't available to us, but I had contacts who filled me in. Essentially the same arrangements were made with them. Burkey donated his time and talents in exchange for the use of lab facilities and his keep. He did most of it at Argonne, and I don't have to tell you they have the best of both kinds of accommodations."

"It all sounds very insidious."

"It is, Chief. Burkey has discovered the Achilles heel of the system: to incur tax liability you have to have income. He's found a way to live well without income, as the taxing statutes define it. Fortunately, there aren't many people who could pull that off."

"But he can't possibly exist that way. Much less live the way he seems to. Who paid for his trip to Sweden, for instance?"

"Somebody staked him, Chief. That's the basis of his theory. And it's a sound theory with a lot of good, hard experimental proof behind it. It's not original with Burkey. It probably predates human history. You can see why: a smart guy like Copernicus, or DaVinci, or Kepler, who has the ability to solve problems, finds patrons who pension him off. The next best thing to being wealthy is to be in a position to control and enjoy the wealth of others."

"That's what Burkey is doing?"

"In essence, yes."

"Now, we ought to be able to stop a thing like that from happening. If he gets to enjoy it, he's received income."

"Maybe Congress could. We can't, and I'm not sure they should. It would be a nightmare to police, because we'd have to go after everybody, not just Burkey."

"You mean other people are doing what he does?"

"Sure. Millions of them. Burkey's just better at it than anybody else. If you analyze his system it's easy to see how he does it; all it amounts to is piling up markers. When he wants something he

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

calls one in and whoever is obligated gives it to him."

"But he spends money. Here, look at this: your own report. You had him tailed on one of his spending sprees."

"Hm, yes. We did that. Alice Mackensen followed him around the Galleria. He was buying a new wardrobe that day. That was the week before he left for that seminar in Garmisch—Partikirchen. He has pretty good taste in clothes."

"He spent $8,300, according to this report. Where'd he get it?"

"Loans—we checked that out. The day before he went shopping he borrowed $20,000 from a Taco Tycoon named Lucio Garcia, over in Mission. Signed a note, too. Garcia showed it to us. Burkey's signed hundred of notes."

"Is he paying any of them back?"

"Not that we know of. Probably he'll default on every one of them, or the holders will simply let them lie until the statute of limitations runs."

"Then we can get him."

"No. He has to be sued, and plead the statute as a defense first; then, if he's successful, we might be able to call it income—if we could prove he had the requisite intent when he signed the notes."

"I see."

Bradley looked at the Chief, and the expression on his face told Claud he didn't agree with that statement.

More isolence. Claud didn't like it at all, but for the moment Bradley had a use, a good one; and from the tracks he left in Burkey's file it was apparent that Bradley, properly used, could be a first-class hatchet man.

Claud needed one of those, because he'd have to see this project through, now that he'd gone on record with it. His own words and actions had trapped him into that course. Bradley would be sure to discuss this interview with his cronies, and word of any indecisiveness would get around. Indecisiveness wasn't tolerated in this agency. The rule was, do something, even if it's wrong, and do it regardless of cost.

So Claud did. "Bradley," he said. "We're going to get him. We'll expend whatever man-hours are necessary, but we'll get him."

"How? We've been told to lay off. Even if we could sweat him and we could prove a case, it wouldn't be collectible. He's got nothing; he's judgment-proof."

"I'm talking about a criminal prosecution, Bradley. I want him in the slam." *God,* thought Claud, *is that me talking?* He tried to remember what had gotten him so fired up.

"Okay, Chief. You're the boss. How?"

"Very quietly," Claud answered, putting on his most enigmatic smile. "We'll mount an undercover operation; get somebody close to him. We'll find out who his current patrons are, and we'll sweat them until they talk. We'll get Burkey like we got Capone—and we *will* get him." He collected both files and pushed them across the desk to Bradley. "You know what to do, Bradley: get going."

Martin Burkey was in one of his Bohemian moods. In fact, it was a regular Bohemian period, and the little cottage along the quiet stream here in Comfort was just the place for it. The nearest neighbor was out on the hard road and,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

just by coincidence, happened to be a liquor store. And just by another happy coincidence that store just happened to have several cases of a very good French champagne, vintage '74, that Burkey particularly liked.

He now lay in a hammock on the porch, dressed in Gucci shorts, enjoying the quiet afternoon with a bottle of the same on ice at his elbow. And while stroking the ten-day growth of the fine new beard he was sprouting, he contemplated the nature of the quark, allowing his mind to drift wherever it would.

That was the secret of his understanding: to become whatever it was that he studied, to assume its nature and its posture. And if elemental particles had a viewpoint he would assume that too, and behave as logic demanded they behave.

And later, if speculation proved fruitful, he would explore the mathematics of it, using the splendid terminal in the back bedroom to consort with some of the world's most voluminous data bases, courtesy of his many friends in education and industry. No chalkboards for him; no hours of skull-splitting concentration. Burkey liked it free and easy to match the rest of his lifestyle, which, though outwardly it might seem austere, was in fact hedonistic in the extreme. Burkey salvaged enough of his time, and only enough, to make the system work.

He had just reduced himself. Mentally he was but a mote. And that mote was crawling slowly into a nucleus. He urged himself onward, straining to become even smaller, groping for the feeling which represented the effect of the binding force. Since this required a sip of champagne to catalyze, he raised the glass and tipped it up.

As he did so there came from the woods, in the direction of the dirt road, a muffled crash and a piercing high-pitched scream.

Burkey had tipped too far, startled at the noise. His attention left the nucleus abruptly and dashed to his sodden beard and the icy puddle of champagne that now sloshed in his navel. Reverie was gone. Curiosity was present.

He rose, grabbed the bottle, used the towel with which it had been wrapped to mop the sticky liquid off his body, and slipped his feet into the rubber-soled thongs beneath the hammock.

Thus prepared, he trotted down the path to the road.

At the end two things immediately caught his attention. He was suitably impressed by each. First and foremost was the dark, animal beauty of the girl stretched out on the dusty ground. Second was the massive and utter ruin of the bicycle she must have been riding. Its front wheel had collapsed, per Newton's third, in the collision with the big oak tree, and its handle bars were now perpendicular to the front axle.

He looked down at her, noting no signs of life. She lay face down in a grassy area between two giant roots and didn't move. Burkey bent down, grabbed her left shoulder, and rolled her over. She was limp, and on her neck and upper chest there was a long abrasion, probably caused by the rough bark of the tree. Nowhere was there any blood, but she seemed to be out cold.

He examined her arms and legs, alert for swelling indicative of broken bones. He found none, and began feeling

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

around on her head. There was a bump on the right side just above the temple and underneath the luxuriant black hair.

He had no car. If she was badly hurt he'd have to call on the phone to get someone from town. In any event, he couldn't leave her here while he did it. So he picked her up and started back with her to the cottage.

Burkey liked women, and he knew in an instant he was going to like this one. She was exquisitely formed and quite close to his idealistic feminine model: dark and petite, with a certain wildness suggested by the finely chiseled line of the jaw. About twenty-five, he imagined, and a hundred fifteen pounds or less. Burkey himself was no giant at his five-ten, but it was easy to feel like one when bearing a burden such as this.

He reached the first step to the porch and started up, catching his thong on the riser. Careful, he thought; don't drop her. He placed his next step with care just as she let out a low moan. The third step was onto the porch surface and no problem. But she was; she started to squirm violently.

He couldn't hold her. It had been his intention to take her inside. But the wild movement ruled that out. He stepped to the hammock and dropped her down on that, on her back.

Immediately her eyes opened, and started to rise. Burkey pushed her back down. "Don't do that," he shouted. "Rest; you may have a concussion."

"Where have you taken me? Where's my bike?"

"Down the path. You're at my house. I'm Martin Burkey. Your bike's going to need some work."

"Um. Yes, I remember—the tree. Something flew out of it just as I was passing. Scared me half to death. I guess I lost control."

"I guess you did. You crashed right into it. How do you feel?"

"Like I was hit in the head with a brick." She noticed the abrasion and began rubbing it. The tiny halter she wore shifted with each movement.

The effect was not lost on Burkey, who intended that this fortuitous meeting should not die on the vine. "I was having some champagne, uh, Miss; would you like some?"

"Yes. Oh—I'm sorry. My name's Illona Parsons, Mr. Burkey. And yes, I would like some. Only, is it wise to drink after a concussion?"

"It'll take your mind off the headache you'll have in a few minutes." He poured her a glass and handed it to her. "I'll go back to the road and bring your bike up. You wait here."

"My purse'll be around somewhere. Can you bring that too?"

"I'll find it." He turned and trotted off.

Illona Parsons smiled. It was working out fine. She'd made it. No longer was she stuck in the role of the clerk. Her life now promised adventure, intrigue. She was thrilled. She just knew she'd find this undercover work facinating.

A hundred yards away, considering the same subject matter in a slightly different way, Burkey was thinking substantially the same thing.

"Hot dawg!" Claud was ecstatic. "Sheer genius, Bradley. I told you this could work. The pieces are starting to fall into place."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Bradley sat there relaxed and let Claud ramble. He couldn't see the sense in this, but he wasn't the boss.

"Look at this: Illona really came through. That cottage. Shelby Ordway owns it—Ordway Oil. And they're the ones who just developed that new particle-beam drilling rig. Tell me that's not part of Burkey's fee for helping.

"That computer he uses—that's an experimental job. Salyer Microelectronics is supposed to have a new zero time switch; again, that's got to be Burkey's work. They're going on a trip to Tahiti; private jet—courtesy of International Arquebus and Arbalest. Tie that one into the F-28 and its new weaponry and you've got another Burkey pawprint. Everything he does—everything he uses—has some connection to an outfit that owes him a favor."

Bradley nodded. "All right, they're grateful. We still have the problem of establishing a dollar value and then collecting."

"Oh, we can do that all right, Bradley. And the beautiful thing about it is that we have mountains of information right here at our fingertips, right in our own computer. I want you to get busy pulling it out. Now that we know who to hit and approximately when, we can establish a relationship between these 'favors.' And that, Bradley, is all we need to close the trap. That drill, for instance—that's worth hundred of millions all by itself. We've got Ordway's sales and production figures for past years. It might take an audit to do it, but we can dig into research costs too. What do you want to bet they've expensed this favor out somewhere where they don't think we'd look?"

"I suppose we could do it, Chief. There'll be a lot of guesswork involved, though."

"We've done that before and gotten away with it, Bradley. And we're entitled to guess if a taxpayer forces it on us by holding out. The Supreme Court said so."

"I don't know, Chief. We'll have to be careful. Pillow talk's one thing, but she's been tuning into his phone calls and copying his records. Those things are constitutionally protected. If word leaks out . . ."

"It won't. Who's going to tell? You, me? Besides, we're not hitting Burkey directly; we're hitting his benefactors—at first, anyhow. Now, get to work."

Clement Atwell still wore the same style of charcoal-gray suit that had been popular thirty years before, when he'd graduated from Harvard Law School. And he still affected the stiffly starched collars and red-stripe tie, too.

That marked him as a conservative and that in truth is what he was, and what any good tax counsel had to be.

He sat in Billy Sherwood's office and listened to a long, sad story. Billy was nearly crying when it was over.

"Now," said Atwell, "let me see if I got that straight. You hired Martin Burkey, but you didn't hire him. And then you took the process he described and filed a patent application in your own name. And then you began manufacturing the device that was the subject of the patent and you're paying Burkey royalties on the Q.T. Is that substantially it?"

"Well, there's more to it than that, Mr. Atwell. For instance, none of this

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

was my idea; it was Burkey's. He said if he took money, the tax people would just grab it all anyhow. I could do him favors instead."

"What favors? This yacht, the *Harpy*; full Coast Guard certified crew on standby. What's an Oklahoma company doing with a yacht anyway?"

"We keep it on the Gulf, down in Rockport, Texas. I'll level with you, Mr. Atwell; we got it for Burkey."

"You better level with me, my friend. What else are you doing for him?"

"Nothing much. Oh, we throw a party for him once in a while. Always overseas, though; nothing here in the States."

"I see. Then this ski lodge in the New Zealand Alps—$154,000 for two weeks—that was for Burkey?"

"Yeah. You know, we are careful about all this, Mr. Atwell. There's no way anybody could have figured that out."

"You've got a leak in your accounting department, Mr. Sherwood. Let's face it: those things happen."

"They said they want to look at the books. Do I have to let them?"

"It depends. There has to be proper notice. The procedures have to be followed. But generally speaking, the answer is yes. We can stall a little, challenge each step in court, but eventually you'll wind up laying your guts on the table. The IRS has powers Congress would never think of giving to any other agency."

"Can't we make a deal?"

"Probably, if you don't care about getting ripped. They always have a hand out. But it occurs to me that this might not end your problem. What about your stockholders, your lenders? How are they going to feel about a thing like this?"

Sherwood's silence was his answer.

"Whatever else you do, Mr. Sherwood, you have to cut Burkey loose. You have to end your ties to him. Legally you have no obligation. If what you've told me is true, he can't prove a thing in court, and from what I hear there's little danger he'd try."

"He wouldn't. But this is a matter of honor, Mr. Atwell. I gave Burkey my word. And if I need his help again, what then?"

"When you're dealing with the IRS, Mr. Sherwood, you can forget you ever heard the word. Take my advice. Buy them off. Paying blackmail is cheaper in the long run. I've seen them spend a thousand dollars to collect a dime. You can't fight that kind of power."

"We can't go? Why not?"

"I don't understand it, Illona. I got the marine operator to check everywhere. No *Harpy*. She's not at Rockport. She's not anywhere, according to Ma Bell. It's like she never existed. How about we go to Geneva instead, do a little shopping, get you some of that slinky silk underwear, the real stuff. You know how that turns me on."

"Fly?" Illona Parsons was pouting. "It's not the same. I wanted a cruise to the Windwards. I need to touch up my tan."

"Why can't you do that in the back yard? Same sun."

"It's not the same. Marty, I thought you could do things."

"I can . . . could. I don't understand this. I'll call Billy."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

He tried. Several times, in fact. He left messages each time. Billy never called back.

Things got worse, and Illona grew more and more moody. She was not the happy-go-lucky girl she'd been when she'd moved in with Burkey eight months before.

He didn't understand why she was troubled. He found her moods inexplicable. She was distant, and there were times he felt that the relationship had lasted far too long already. It was the longest liaison Burkey could remember.

One day she left without telling him where she was going. She returned late that night, looking haggard, and refused to explain her absence. Burkey almost threw her out, but while he sat there on the porch trying to make up his mind to do it, he heard her inside, crying herself to sleep.

Martin Burkey, whose head for physics was reputed to be the equal of Newton's or Einstein's, even Schmidt's, had a crushingly real feeling that something had gone fundamentally wrong with his life, and that his failure to comprehend the opposite sex was only a small part of it.

"What do you mean she quit? Why would she tell you, anyway? She works for me."

"You were gone, Chief. She came in yesterday, asked for you, and when she found out you weren't available she asked for me. Your ace undercover girl's defected, Chief; that's it. End of case."

"No, it isn't. We've got enough. I tell you, Bradley, we can sink him. You put the arm on everybody: every last one of them. Squeeze 'em dry. Put every agent we've got on the case. Shut Burkey down."

His thoughts were on Illona. It added to his ire. To think he'd sacrificed his own interest in her just to get Burkey. And then Burkey, the cad; he'd seduced her; poisoned her mind. Turned her against her superiors. Against her own government. What treachery! They'd pay, though. Both of them.

"What's that, Marty?"

"It's a bill. The mail man just brought it. It's from the liquor store. It says we owe $380. Can you beat that?"

"Marty, things are going wrong, aren't they?"

He went over and sat down beside her on the edge of the porch. Ordinarily he didn't get this close without touching. This time, it just didn't seem like the thing to do. Burkey was genuinely worried, for the first time in his adult life, that he'd lost control of his destiny.

"I told 'em, Marty. I've quit 'em since, but I told 'em enough."

"What are you talking about?"

She turned to face him. There were great tears welling in her eyes, and she looked genuinely miserable. For the first time, Burkey noticed there were dark circles under them, too. His best girl hadn't been sleeping too well.

"Our meeting wasn't accidental, Marty. Nothing flew out at me. I did the bump-on-the-head bit myself, with a stick. I was dropped off at the tree with a pickup truck."

He looked at her wide-eyed, not knowing what to say.

"Before that I was a secretary. I worked for IRS. After I came here I dug

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

through your things, listened into your calls, read your mail; and I told Mr. Kukenschabe everything you did.''

''You what!?''

''I finked you out, Marty. That's what happened to the yacht. That's the reason for the bill you just got. That's why the computer terminal's down. But I couldn't keep it up, Marty. Not after I realized what you meant to me. I went to see them. I quit. That's where I was all day Monday.''

Burkey was not an emotional person. He was a calculating person. Reason was his watchword, and his strength and reason prevailed now. ''I won't pretend I'm not hurt, Illona; I am. But I believe you when you tell me you're through with them, and I'm glad you came back to stay with me.'' He gave her a reassuring hug that didn't, and waited for her to bawl out the crisis. It took a couple of minutes.

Finally she caught hold, wiped her eyes, and turned to him. ''I'm sorry, Marty. How can you ever forgive me?''

''I've already done that, Illona. It's like it never happened, and I'm not concerned with that. What does concern me is what happens to us from now on. By attacking and intimidating my friends they can slowly starve me out, and then, if they push hard enough, they might be able to trump up some charges.''

''I'm sure that's what they have in mind as a final objective, Marty. I know Mr. Kukenschabe's type. He's an empire-builder. In his own way Bradley's worse. He's got no morals at all. They say he'd peek in the john on his own grandmother.''

''It explains why my clients are cutting off the pay, and why I don't get much work lately. I was beginning to wonder about that, but it didn't bother me because I sort of liked retirement. I always felt I'd worked hard enough to build what I had and deserved to take things easy. It just goes to show you: you can't get complacent.''

''What are you going to do, Marty?''

''Well, now that I know I'm in a fight, I plan to hit back, lay in a few rounds of my own. I still have a few friends with clout, including a few that I don't think IRS is going to be able to intimidate. Like Barney Olson, for instance.''

''I don't think I know him.''

''Few people do. Barney's with the CIA and the CIA owes me, them and the Defense Department. They owe me a bundle.'' He started inside to use the phone.

''Wait a minute, Marty. Think this out.''

''What's to think about?''

''Marty, I know about your work for the government. I also know that the government made an effort to protect you from just the sort of thing that's happening now. But it's not working anymore. Have you asked yourself why?''

''I know why; because it's being done sneaky. My friends don't know. Fothergill's a little on the chicken-hearted side anyhow. I'll just give his confidence a boost and . . .''

''And if he says he won't help, then what? Marty, I know these people. I know how they operate. And I told you Mr. Kukenschabe was an empire-builder. Do you know how empires are built?''

''No. I was never all that interested.''

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Nevertheless, he stopped in his journey toward the phone.

"Kukenschabe would have started by gathering as much information as he could. As soon as he had something on one person, he'd use that person as a pawn, to collect more information. Marty, I'm sure that's what it is. Everybody's afraid. They all want to save their own skins. I heard the two of them talking when this first started. I listened at the intercom while they talked. It's all illegal. Nobody in government's got the authority to order a tax investigation stopped. In the eyes of justice, every one of the people who've helped you is guilty of conspiracy to violate the revenue laws of the United States."

"But I helped, Illona . . . I . . ."

"I know you did. They know you did. But don't expect gratitude. In government it's 'What have you done for me lately?' Don't you see—the fact that you've given the country a beam weapon, that doesn't count. You should have taken pay, and you should have paid taxes on it. The fact that you didn't makes you a criminal."

"But . . ."

"No, Marty. I know what you're going to say, and I agree. What you've given the country is far more than you took. The equities are on your side. The law isn't. Don't call Olson."

"I have to. He's the only one who can help me."

"What if they kill you instead?"

"What! They wouldn't ever do that."

"Yes, they would, especially if you decided to make a big public stink, or maybe tried to leave the country. Remember, they've gotten what they wanted from you already. If they thought you might try to use your knowledge as a weapon, say, by assisting an unfriendly government to duplicate the beam weapon, they wouldn't hesitate a moment."

"But I'd never do that, Illona. I'm a loyal American. I'd never hurt my country."

"You and I know that. They'd assume the worst. I'm afraid, Marty, that you're a little mixed up about loyalty. A government, any government, is essentially a mob. And a mob is an entirely different organism from the individuals who compose it. Don't ever expect your government to be grateful."

"Somebody's coming. I heard a car pull up."

"Come on. Let's get out of sight."

Burkey started into the house. Illona restrained him.

"Not in there. In the woods. They'll look in the house if it's who I think it is."

They rushed under cover of some nearby oleanders and watched through the thick leaves as the men came up the path and stopped at the porch.

"One of them's Bradley, Marty. I don't know the other one. But they generally borrow agents from the FBI to make a bust."

Bradley went up and knocked at the door. The other man stood just off the porch and waited. He took his hand, stuck it up the back of his jacket and scratched.

"Oh, oh. I think I'm right. The other man's got cuffs in his belt. IRS agents don't normally carry them. I think they plan to arrest you. They've probably got a warrant, too."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"I wish I had called Barney," Burkey whispered back.

When they failed to answer the door, Bradley went back down the steps and said to the other man, "We'll wait here. They probably went out in the woods. I could see inside. It looked empty."

"Come on, Marty. Let's go," Illona whispered.

"Where?"

"Down to the road. They must have a car."

"So?"

"Let's see if anybody's in it. If not, we can borrow it."

He looked at her incredulously.

"They owe you, Marty. By the way, you can hot-wire a car, can't you?"

"Probably. But that's stealing."

"Borrowing. Is it worth your freedom to quibble over definitions?"

There was nobody in the car, and true to Illona's expectations, it was no challenge at all to Burkey's electrical ability.

"Let's push it away. There's a grade a little further ahead. We can coast down it and start the engine when we're far enough away so that they won't hear it."

"It's a dead-end road, Illona; we have to come back here anyway."

"We can make it through the fields to the main road, Marty. Better let me drive, though. I can see you're not the adventurous type."

In minutes they were on I-10 headed for San Antonio, and for all they knew the two government men were still on the porch waiting for them to come back from a romp.

"Where are we going, Illona?"

"San Antonio, for a start. Big cities make good hiding places. You must have some friends there who can help us."

"Yes. What about the car? They'll be watching for it."

"Not for a while, they won't be. By that time we'll have it parked someplace downtown with the windows open and those wires hanging out. Take my word for it; it'll be in Mexico before sunset."

"You let him get away? A simple bust like that and you screw it up?" Kukenschabe glared at Bradley in disbelief.

Bradley found himself wishing he hadn't picked a video phone to call in the bad news. Voice would have been bad enough. "Illona must have spotted me. They were probably somewhere in the woods to start with. Uh, Chief; they took the car, too."

"What car? Your car?"

"Yeah. I guess it was them. Anyhow, it's gone. Somebody took it."

"You waited all afternoon for Burkey to come back without once checking in with the office? You didn't go back to the car?"

"We waited in the house, where they wouldn't see us." He didn't tell Kukenschabe he and the FBI man had polished off what was left of a liter of champagne, or that he had fallen asleep.

All right. Get back here. I assume there's an APB out by now."

"Right, Chief. We'll get them. You can book it."

They didn't get them that day, or the second day, or that week. They didn't get them the second week, either. After that, time passed, and it wasn't long

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

before Burkey and the girl had been fugitives for a whole month.

IRS had by that time abandoned the stake-out on the house in Comfort, since they considered it unlikely the two would return.

"It can't last, Chief. Burkey's got no money that we know of. If Illona had any, it'll be gone soon. And it takes money to hide out."

"Not that much. Not in this country, and not if they're willing to go without frills. I remember when I was a kid; hippies lived on Padre Island on just what fish and seafood they could catch bare-handed, and they sold their blood for beer money."

"We've got people out checking places like that."

"Then call them in. I don't think Burkey's out there. I think he's getting shelter from friends. We're more likely to get the answer to which ones that is by running computer checks."

"But the CIA took all that, didn't they?"

"Copies—they've got copies. Yeah, and that's another thing that bothers me. They'll kill 'em both. I know they will. A guy told me the other day he thinks the Russians are looking for Burkey, too. They've got lots of people here. Our borders are like sieves. If they have any inkling we've got beam weaponry—and I don't think there's a chance they don't know—they'll know Burkey had a part in it. That makes them both as good as dead. It's a shame to waste *her*. I sort of liked her, myself."

Bradley didn't answer. Ordinarily, he didn't philosophize. He just moved with the tide. But lately even he had begun wondering just how juvenile governmental thinking could get. He found himself comparing its inner workings to a pre-kindergarten play room. There wasn't much it did that made sense.

"It's spooky down here, Marty. I don't like it. What is it, anyway?"

"It's a salt cavern. I did my initial work on Ordway's drill rig down here. Part of the experiment led to the development of the beam weapon, too. Few enough people knew about it to begin with, and probably most of them have forgotten by now. I hope so, anyway. But I'm glad Shelby didn't close it down completely."

"It certainly looks abandoned to me."

"We're using a generator to power this elevator. Shelby'll have us hooked up to commercial power soon, and I can get to work. The main thing is we'll be safe here, and I'll have the equipment I need to try an idea I've been cooking."

"So, I look bad. So would you, if you'd been stuck in an elevator all night. The power didn't come on again until 4 AM. Where were you?"

"I lucked out, Chief. I was home." Bradley looked up as Kukenshabe's new secretary brought in the coffee. *Hm*, he thought; *definitely not his type. More my type*. But then, as a field agent, he didn't rate a secretary. Times would change, though. Old Claud was getting flaky, losing his grip, which meant he might not be around much longer. And as the senior agent, Bradley felt he might have a chance at Claud's job.

"Have you got anything new on Burkey?"

"We've picked up the trail again,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Chief. They got the kid who took the car. He says he found it parked on East Commerce Street in San Antonio, already wired. So we know they went there first. Then, we think, they took a bus. One of the drivers remembers a couple answering their description, who didn't have luggage and who got off at Seguin. From there they could have hitchhiked easy enough. Probably they hid out somewhere in Houston. We know Burkey had lots of contacts there. Our prime suspect is a guy named Ordway."

"Suspect? Certainly you've had enough time to check him out by now."

"Chief, you have to go slow on a thing like this. You can't just rush in and grab a guy like that by the collar. You have to use finesse." He gestured with thumb and forefingers. "We're infiltrating Ordway's household staff now. It's only a matter of time until we get a line on him."

"Something has to break soon, Bradley. I'm taking an awful lot of heat from the commissioner over this. If we hadn't found so much on so many people, they would have shut this case down already. But we have to get Burkey soon."

"Well, what do you think, Illona?" Burkey had to shout.

"This is *heavy!* The water's coming down in bucketfuls and not a drop on us!"

Burkey turned a dial on the box he held and the field broadened to include the entire area of the salt cavern shaft. What had been a steady and deafening roar of rain on the steel roof of the elevator shack ceased abruptly, and it was possible for the two to talk in normal tones.

"It needs more work, Illona. There are certain undesirable side effects that we'll want to get rid of, but in the meantime it does give us a certain mobility."

"Good; I'm tired of hiding. I need to get out. We ought to celebrate."

"And so we shall. Let's hop over to the Galleria. I've got friends over there who can fix us up with the proper clothes to do that in."

Claud Kukenschabe had been expecting nothing from the day. It was raining; raining hard. So hard he dreaded the thought of quitting time, because it meant getting soaked on the way to the car.

Bradley's hat dripped rain in tiny rivers all around the brim, and his face, which must be thrust right in the camera of the phone booth, filled Claud's screen. "We got 'em, Chief," he shouted, over and over again.

"What do you mean you got them? Where are you?"

"Out at the airport, Chief, getting a chopper. I thought you'd want to be in on it."

"Bradley, what are you talking about?"

"Burkey and the girl are in Houston, eating dinner at a place called Marcel's, sitting there big as you please. One of our people happened to be there. He spotted them and called me. I told them to move in, but to hold off on the bust until I get there. Do you want to go or don't you?"

Claud balanced a dousing against the acclaim this would bring him and de-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

cided in favor of the latter. "Pick me up in the parking lot, Bradley."

Ninety minutes later the two of them emerged from the helicopter on the roof of the IA&A building, just two floors above Marcel's Restaurant. They quickly ducked into the stairway and down two flights.

The agent at the door recognized Bradley and let them through. Another walked up to Claud.

"Everything's set, Chief. They just finished dessert, and as far as we can tell they don't suspect a thing. The rest of the people in here belong to us. The manager's been putting his real customers in the other rooms. We have the stairways and elevators secured. There's no way they can get out."

"Okay," said Claud. "Keep them back. I'll handle this personally."

He started off across the room, dripping as he went, and feeling like anything but a hero. At the far corner table, dry and impeccably attired in white tie and tails, sat Burkey, unaware of his approach. Illona, however, faced him, and recognized him immediately.

"Hello, Mr. K. We almost gave up on you. Is it raining?"

Claud found himself really regretting the waste of it all. She looked stunning. Dressed in a pale blue, off-the-shoulder gown that set off her dark hair and eyes, she was just about the best-looking woman he knew. Maybe, he thought, there'll be a way to salvage her. "You're both under arrest. Come along. Dinner's over."

"Not quite," Burkey replied. "We haven't finished our wine. 1984 was a very good year for Beaujolais, and this is a very good bottle. Sit down; have some." He picked up the bottle and filled an empty glass.

Against his better judgment, Claud did so, staining the brocade seat of the chair with his wet raincoat. "You led us a merry chase, Burkey. I guess you know we'll throw the book at you: unlawful flight to avoid prosecution, theft of government property, probably a dozen counts of evasion. You'll be an old man when you get out." He turned to Illona. "I'm going to assume you did all this under duress, Miss Parsons. I think the courts will go light on you."

"Well, Mr. K., I didn't. And it's not Miss Parsons; it's Mrs. Burkey. See!" She held up her left hand. It looked like she held a whole fistful of diamonds. "We're on our honeymoon."

"I hope this was a pre-consummated arrangement," said Claud, "because it's separate cells at the Harris County Jail."

It was over. She'd done it. And Claud felt a little differently about her, knowing she'd thrown herself away. He reached for the glass, intending to give it a couple of gulps and then clear out. He couldn't reach it. Something was in the way.

"You're not drinking your wine, Officer. Too bad. It's very good. It'd be a shame to waste it." Burkey reached out, took the glass, raised it to his lips and swallowed. "Nothing wrong with it that I can tell. You try it, Illona."

She took the glass and drank the rest.

Claud was on his feet, flailing away at the empty air.

"It's no use, Officer. The field's impenetrable. You can't get in; you can't shoot through it, either. And it goes where we go."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"You're not going anywhere, Burkey. We've got this place sealed off. If we have to, we can sit here until you starve to death."

"No, you can't, Officer." Burkey turned the dial of the instrument at his belt, and Claud fell over backwards. By the time he had scrambled to his feet with the help of others who had rushed over, Burkey was also standing. "I can expand the field at will, Officer. If I expand it to the wall and you're in the way, it'll squash you like a cockroach. We're ready to leave. We'll leave, one way or another, and there isn't anything you can do about it."

He and Illona started for the door. A ring of agents, some with drawn guns, formed around them. Burkey touched the dial briefly. Suddenly they were all flat on their backs, firing wildly at the ceiling. Holes appeared and plaster fell, bouncing off the field and falling to the floor.

"Stop it. Hold your fire," Claud was shouting. "Follow them wherever they go. They won't get away with this."

But they did. On the ground, surrounded by a thin nimbus where raindrops hit the shield, they climbed into a waiting cab and drove to their motel.

"I'm sorry, Claud. You blew it." Secretary of the Treasury Nathan P. Fothergill was a man of stern appearance. He sat at his desk and stared up at Claud, who stood holding his hat in his hand and chewing nervously on his lower lip. "You were told to lay off of Burkey."

"Mr. Secretary, I took an oath. I had a job to do. Burkey wasn't paying his share. Justice demanded that we . . ."

"Justice, Mr. Kukenschabe, was being served. Burkey wasn't riding free. He was giving his country far more than he took. He just wanted to do it his own way. It was like a game to him, and we indulged him, because we knew the benefits would far outweigh any disadvantages."

"I had to follow the rules, and rules provide a procedure that has to be followed."

"I know about that, Mr. Kukenschabe. And rules are fine, if you use a little judgment with them. But bureaucrats don't seem to use judgment; they follow the recipe. They wind up making cookbook adjudications."

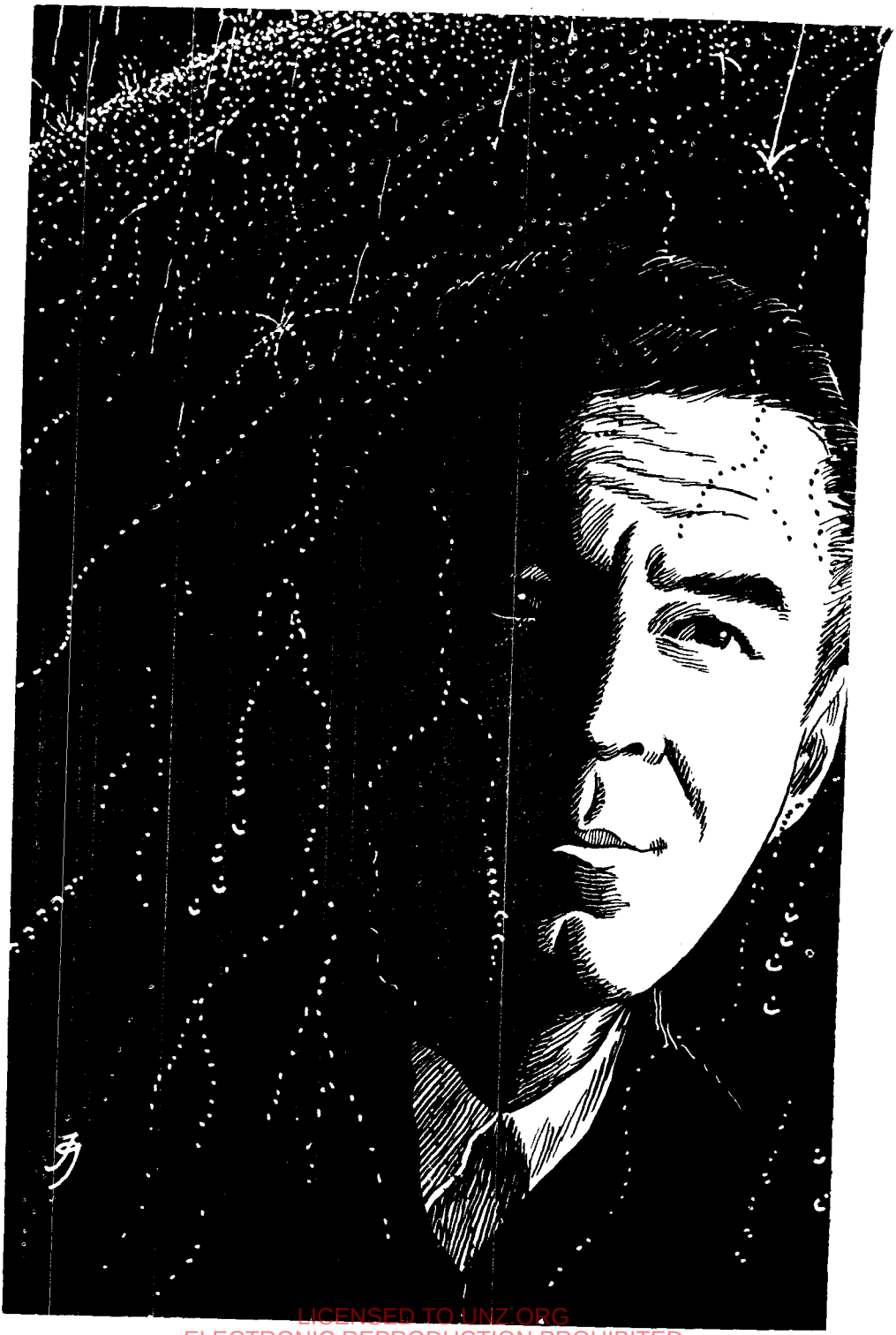
Claud suddenly found courage. "No sir. That's not what we did. Burkey was cheating. Not only was he cheating, but he was conspiring with other taxpayers to break the law. He turned them into cheaters, probably without too much trouble. Well sir, we found out about that, and went to work, doing our job."

"What you did, Mr. Kukenschabe, was rock the boat. You took a nice, workable situation that was beneficial to everybody, blabbed it around, and turned it into a real crisis: a crisis even Martin Burkey might not be able to handle."

"What do you mean? All he has to do is turn off that shield of his and take his lumps."

"It isn't quite that simple, Mr. Kukenschabe. You see, Burkey knew that there'd be people trying to kill him—kill him, Mr. Kukenschabe, not just lock him away as you intended to do. He'd operated very safely and, I might add, very efficiently just the way things were. Part of the reason we laid off him

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

was to allow him some semblance of a normal life. We let him operate in the shadows, surreptitiously, helping out whenever he was needed, instead of locking him away behind a heavy security screen.

"Nobody ever quite knew for sure just how much of our progress in weaponry Burkey was responsible for. As a theorist, he just developed the ideas and left the hardware to other specialists.

"Now, he's locked up behind that shield and he has to stay there. It's the only place he's safe from kidnapping or assassination."

"So what's wrong with that? Seems to me he's been doing just fine. He goes anywhere he wants."

"True. He can. But—we can't."

"What do you mean?"

"I mean, it's we who are stuck. The field isn't around Burkey; it's around us. Burkey and his wife are outside it. The device he has enables him to push it around a little, but the field itself is static. It's supported by the Earth's electromagnetic field and fed by the particle flux of the sun. It took most of the electrical power production of South Texas to start the reaction going; but now that it's on, not even Burkey knows how to turn it off."

"I still don't see what you mean by 'crisis,' Mr. Secretary. What he can turn on, he can turn off. It could take a little while, but . . ."

"Then I'll tell you a little more. I just got done saying that Burkey's a theoretical physicist, not a nuts-and-bolts man. His job was to think, not to do. He provided the spark and let others fan the flames. He's a scientist only in the sense that Einstein was."

"I thought Einstein was a mathematician."

"Mr. Kukenschabe, you amaze me. You've actually heard of Einstein; you really do have a nodding acquaintance with things outside the world of the con man. Maybe you've heard of Maxwell, too?"

"Made cars, didn't he? I heard Jack Benny had one."

"I take back what I just said."

"Who was he?"

"He was a 19th-century physicist, a great one. He not only made some brilliant discoveries of his own, but he explained much of the work of his predecessors. And the most important thing he accomplished was to tie a bunch of seemingly unrelated physical observations together. Quite successfully, too, I might add. Much more successfully than some of the people who followed him.

"After Maxwell died in 1879, his mantle was assumed by young Albert Einstein, and Einstein, in case you didn't know, had a few original ideas of his own. A couple of these were real breakthroughs: concepts which hadn't existed before he formulated them. Einstein's work made atomic weapons possible. It also shook astrophysics and astronomy to its very foundations, because his concept of space, time, and gravitational relationships could explain so much that older theories couldn't.

"Einstein had a dream, a dream of another breakthrough. He knew another one was inevitable, not just possible, and the reason he knew was that he was aware of flaws in his own thinking. He

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

wanted to shake these out: tie everything up together and do it in one fell swoop.

"He failed. He spent his whole life in pursuit of a unified field equation. Is any of this getting through to you, Mr. Kukenschabe?"

"Uh, sure, Mr. Secretary. It's interesting," Claud lied. He secretly hoped that if he let the boss ramble, get on a new tack, it might salve things over a bit.

Fothergill continued. "Einstein died without coming close, and knowing that part of the reason he didn't was his own error. But it wasn't just his error that concerned him, it was the possible *cumulative* error. He suspected Maxwell of fundamental error, too; and since electromagnetism as well as gravity was to be included in his concept of the unified field, the breakthrough, when it came, had to deal with that force.

"Enter Burkey. Burkey was not only a thinker of Einsteinian stature, but he had the benefit of lots of developments which had occurred since Einstein's time. Burkey thought, apparently correctly, that the answer lay in the nature and behavior of primary particles whose very existence Einstein, much less Maxwell, never suspected.

"And Burkey was just getting started when you came along. He had grasped the theory of the field he's since created, but he hadn't had time to explore its practical ramifications.

"You, Kukenschabe—you, with your meddling; with your bungling avarice; your single-minded, moronic, egotistical desire to be Burkey's own personal nemesis—goaded Burkey into taking rash action; drove him to tinker with hardware. He didn't have any business experimenting on the scale he did, and ordinarily he wouldn't have, but you didn't leave him much choice.

"You, Mr. Kukenschabe, may have doomed mankind to extinction."

Claud's eyes bugged; his ears started turning red. Could Fothergill really mean that?

Evidently, he could, since he went on with his tirade. "I said the field was static, Kukenschabe. That's not quite true. It seems to be growing, in small increments, at a fairly steady pace. Already it's interfered with some of NASA's probes, though big, powerful rockets can still get through it. But the indications are that, as it grows in strength, it will also descend. Long before it reaches the point where it will crush people, we'll have atmospheric problems, not only from the pressure, but from pollution. Only the Burkeys will be safe. Now, do you understand what you've done, Kukenschabe?"

"I'm beginning to; I'll lay off." The fact that the boss dropped the use of "Mr." portended more trouble.

"It could have been so different, Kukenschabe. There could have been sane, neat, orderly progress. Burkey's breakthrough could have been a boon. We could have had domed cities on the moon, or under Earth's oceans. Just as his particle beam promises us the ability to cook trillions of barrels of petroleum out of the western shales, this field would have given us the other 70% of the Earth's surface to mine and drill. And that would have been only the beginning; nobody can predict the potential of a scientific breakthrough before it happens, or even for a long time after

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

it happens. That was your greatest crime." He paused.

Kukenschabe wrongly assumed that Fothergill was talked out. It therefore seemed the perfect time to say something conciliatory. "Mr. Secretary, I just didn't realize what was going on. My job seemed so important to me that I guess I got a little short-sighted. But, now that you've straightened me out on that part, I can make things right." He tried to sound contrite.

"Oh, I'm not worried about that part of it, Kukenschabe. You see, as of now, you're unemployed.

"As a matter of fact, you're under arrest. Mr. Bradley's waiting outside to handle the formalities."

"Under arrest! What for?"

"Fraud, a couple of counts of evasion, violation of the National Banking Act, extortion . . ."

"Extortion! Hey wait a minute. . . ."

"Albert Clydesdale gave us a statement. You've done pretty well on the stock market, too; and in spite of your efforts to dummy it up, we know about your secret accounts at that bank in Tonga. I'm afraid you've been a rather bad boy, Claud. And though the rest of us might be on the inside looking out, I'm afraid that for you the crisis is a little deeper. Now, why don't you go take your lumps?"

Claud turned, put on his hat, and headed for the door. Bradley was waiting. "I suppose you'll get my job?"

"I've already got it, Claud. Who do you think turned you in?"

"You?"

"Sure. After all, I took an oath. I have to do my job, don't I, no matter who it hurts?"

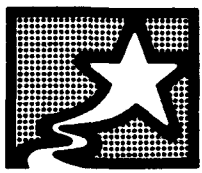
Claud nodded.

"I'm moving Applegarth up to my spot. He'll take you along and book you. Promise me you won't give him any trouble."

"No. No trouble." Claud was thinking. What was that little deal that had turned up in the last internal audit of Bradley's current return? The one that had caught his eye, but which was superficially legitimate? Maybe Applegarth would take an interest. *I'll mention it,* he told himself. ■

TAKE A DAY OFF FROM SMOKING

NOVEMBER 17, 1983



the great ★ american smokeout

AMERICAN CANCER SOCIETY

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the reference library

By Tom Easton

The Bones of Zora, L.S. and C.C. de Camp, Phantasia. $17.00. ? pp.
Forty Thousand in Gehenna, C.J. Cherryh, Phantasia, $17.00, ? pp. (13101 Lincoln St., Huntington Woods, MI 48070).
Millennium, J. Varley, Berkley, $6.95, 288 pp.
Bluesong, S.J. van Scyoc, Berkley, $4.95, 272 pp.
The Gates of Eden, B. Stableford, DAW, $2.50, 176 pp.
The War Against the Chtorr, Vol. I: A Matter for Men, D. Gerrold, Timescape, $15.95, 384 pp.
The Shadow of the Ship, R.W. Franson, Ballantine/Del Rey, $2.75, 304 pp.
Invasion: Earth, H. Harrison, Ace, $2.75, 211 pp.
Transformer, M.A. Foster, DAW, $2.50, 255 pp.
The Winds of Change, I. Asimov, Doubleday, $15.95, 269 pp.
Dream Makers, Vol. II: The Uncommon Men & Women Who Write Science Fiction, C. Platt, Berkley, $6.95, 320 pp.

Book reviewers deal with a hierarchy of convenience. At the top are hardbounds and paperbacks, easy to hold and read, clearly marked (usually) with page count and price, adorned with brief descriptions of authors for cribbing. Next are bound galleys, whose page count may or may not be accurate; they don't always carry a price, and they usually lack the little biographies. Next are plain, ordinary galleys: sheaves of long, flimsy sheets, unpaged, ungainly, often unpriced. Last are photocopied manuscripts, thick wads of paper that keep falling off the lap.

On the other hand, the last shall be first: When a publisher sends a reviewer a manuscript, the review can appear close to the publication date, rather than a month or so after the book is out of print. That's why Alex Berman sent me the manuscripts for the de Camps' latest Krishna yarn, *The Bones of Zora,* and a new Cherryh tome, *Forty Thousand in Gehenna.* He, as Phantasia Press, plans to publish the books in time for the World Convention over the Labor Day weekend, and he wants reviews out in time to be useful.

The Bones of Zora covers the adventures of Fergus Reith as he guides a paleontologist into the Krishnan hinterlands in search of fossils to resolve a bitter debate. A rival scholar, Reith's ex-wife, religious zealots, and politics complicate the plot; but though the complications lend pace and fury to the action, they seem arbitrary, staged, like a tornado in a wind tunnel. *Bones* is less good than its predecessors, partly because it is too much of a reprise. Too often, the pages ask (and answer), "Whatever happened to so and so?" and the story suffers for its lack of original novelty. Nevertheless, I am sure there are enough Krishna fans to buy out the Phantasia edition. They will enjoy the book enough to justify the expense. However, anyone who first visits Krishna through its *Bones* is going to wonder what all the fuss is about.

Forty Thousand in Gehenna is set in the universe of *Downbelow Station* and other novels. Like them, it stands

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

completely alone; the connection is one of history and context. Unlike them, this one spans centuries, for it is the tale of a colony's development. Gehenna is a world to which 452 standard humans and 41,911 lab-born, tape-programmed *azis* are shipped as colonists. There they meet the calibans, dragon-like mound-builders who prove intelligent in a peculiar way: the calibans think less in words than in patterns, and they "talk" by constructing patterns of mounds across the countryside.

The colony is promptly abandoned. Promised supply ships never come. The calibans destroy it. The colonists lose their technology. Some struggle on amid the ruins. Some take to the woods. Some, the Weirds, move into the mounds with the calibans. In time, there develops a sort of social symbiosis between the two species, and a new civilization begins to form, built on a new way of processing information. Once Gehenna is finally revisited from outside, we gain the vantage of a viewpoint more like our own and begin to be able to interpret what is going on. The end product seems a new element for Cherryh's universe, and one she may be able to use to good effect in future books.

Gehenna is long and slow, and I'm sure it will bore many in its present form. Nevertheless, Cherryh has worked out her vision well, with her usual skill at presenting truly alien aliens. She does not always convince me that the calibans' way of thinking would work as well as she says it does, but the book is still satisfying and rewarding. It is excellent of its kind, and if its kind is less than popular, that may reflect less than well on the modern readers of SF.

John Varley's **Millennium** is also excellent of its kind. Presented as an alternation of "testimonies" of two main characters, it tells of the end of the world, the coming of the millennium. Bill Smith is an investigator of air crashes for the National Transportation Safety Board. As the story opens, he and his Go-Team have been summoned to the site of a mid-air collision between a 747 and a DC-10. He is divorced, alcoholic, full of angst: a man of his time.

Louise Baltimore is a woman of her time, 50,000 years hence, when people die young and rotten with disease, when the air is so foul and people are so adapted to it that they must smoke cigarettes four at a time to get a breath of "fresh" air when they visit our present. Louise wears a movie-star shell over her defective body, and her generation will be the last of *Homo sap*'s stay on Earth.

Bill's and Louise's jobs intersect. She and her team time-hop to disasters throughout history, snatch into the future those destined to die, and replace them with wimps, mindless bodies modified to match the snatchees. She does not visit disasters that will leave survivors (read: witnesses). What does she do with those she snatches? That is not revealed till near the book's end, but let me assure you that their fate fulfills the title; they are not destined for organ banks; they are sheep, not goats.

Millennium's driving force is a twonky: an anachronism, a stunner lost by one of Louise's teammates. It must be retrieved, else the flow of time will change and Louise's time will vanish. Perhaps humanity will be extinguished millennia earlier, and her efforts will be cancelled. Louise must go back to our time not long after the latest rescue mission—the 747/DC-10 crash—to find the stunner. In her search she meets Bill Smith, and their testimonies intersect with potency. In the end they actually march off into the sunset together, while

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Phantasia Press
IS Specialty Publishing!

FORTY THOUSAND IN GEHENNA by C.J. Cherryh
1st Edition: Trade edition: $17.00; boxed, signed, numbered edition: $40.00
GODS OF RIVERWORLD by Philip José Farmer
650 copy signed, numbered, boxed 1st edition: $50.00
THE BONES OF ZORA by L. Sprague & Catherine deCamp
1st edition: Trade edition: $17.00 boxed, signed, numbered edition: $40.00
ORION SHALL RISE by Poul Anderson
600 copy signed, numbered, boxed 1st edition: $45.00
THE ROBOTS OF DAWN by Isaac Asimov
750 copy signed, numbered, boxed 1st edition: $60.00
SPELLSINGER AT THE GATE by Alan Dean Foster
450 copy signed, numbered, boxed 1st edition: $55.00

SEND FOR
FREE CATALOG

PHANTASIA PRESS

13101 LINCOLN ST., HUNTINGTON WOODS, MICHIGAN 48070

the Big Computer that rules Louise's world and her robot companion and lover, Sherman, emerge as Varley's final, millennial surprise.

Varley gives us a very cinematic story, full of gore, violence, melodrama, and action. It is thus little surprise that *Millennium* is already scheduled for Christmas 1984 release by MGM. The book began as the short story "Air Raid" (the Berkley PR department claims it won a 1982 Hugo; but it didn't then or in any other year either, according to my copy of Franson & Devore), which became a screenplay, which became a novelization, which became the present novel. Varley's put a lot of sweat into this one, a lot of hope, and he's produced a very good read. He's likely to make a young fortune from it, and may he do as well again.

Finally, let's note that Varley's chapter titles are all the titles of previous time travel stories. Here is good-humored homage and a touch to tickle the SF reader's fancy.

Sydney van Scyoc's **Bluesong** is a sequel to *Darkchild;* a third volume will appear. Here, Darkchild, a cloned "rauth image" of a vanished explorer, is consort to a Barohna, one of the women who control and channel the sun's heat, with the aid of sunstones, to keep warm the frigid mountain lands in which they and their people live. They have a son, Danior, who feels alien, a boy in a world where Barohnas have only daughters. There is also, elsewhere, Keva, daughter to Darkchild's clone-brother and another Barohna. Left by her father with a lonely tribeswoman when she fell ill on a journey, and then stolen away by her caretaker, Keva has been raised in ignorance of her heritage. But she discovers clues and sets off to learn more.

On her trip, Keva meets Danior. He follows her, and together they find her father as chief of a budding desert civilization. Danior learns of the existence of the man his and Keva's fathers were cloned from and resolves to find him. That, it seems, will be volume three.

Bluesong is a tale of youth emerging

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

into maturity, finding a sense of belonging and responsibility. It is also a further exploration of a strange world that tastes of childhood—nature and adulthood have powers, they hold mysteries, yet they open to the questing, growing child. It and *Darkchild* may thus be fine books to give to a young adolescent.

Brian Stableford's **The Gates of Eden** is a pleasant adventure story set in a time when Earth is seeking colonizable worlds and not finding them. A suspended-animation slow-ship, sent off centuries ago, reports in. It has a world, but the explorers are dead. Send expert help, *fast!* they cry.

The help arrives, and the problem proves to be chameleon-like natives who can absorb and use foreign gene-sets. The solution is obvious—Git!—and would not by itself make more than a short story. Stableford strengthens and elevates his tale by playing with the politics of stability and expectation, the tension of a change that didn't happen. On the other hand, he has done better. Much better.

Not having heard much from David Gerrold lately, I opened **The War Against the Chtorr, Vol. I: A Matter for Men** with interest, hoping for as much good stuff as he's given us in the past. Unfortunately, I didn't get all I hoped for. The book is dedicated to Robert and Ginny Heinlein, and it owes its roots to *Starship Troopers*. The philosophy, conveyed in lectures of a Heinleinian briskness, is very Heinleinian. Freedom equals responsibility, and only those who have demonstrated their responsibility can have the freedom to vote. At the same time, Gerrold's hero, young Jim Murphy, displays a very unHeinleinian conflict of angst vs. acceptance, which gives *Chtorr Wars* (ouch! sorry!) a more modern tone than *Starship Troopers*.

However much at odds with contemporary society it is, Heinlein's and Gerrold's philosophy is hard to argue with or reject. Its main difficulty is that, as it supports the myth of the competent individual, it undermines the ideal of teamwork and interdependence on which our society in fact depends. Heinlein and Gerrold, I'm sure, would argue with this, and with justice, for a team of competent individuals must be a superb team. Yet such individuals serve teams best as leaders, and as an old cliché has it, you can't have all chiefs and no Indians. Heinlein and Gerrold both know this, for in their stories it is only the protagonists and a few selected elders who are actually competent individuals. The rest of their characters are as weak and incompetent as in anyone else's yarns.

Interestingly, Gerrold salts his story with more competent elders than Heinlein ever did. First is the teacher who taught Murphy his civic philosophy, memory of whom gives Gerrold opportunities for many of his lectures. Then come superiors of several ranks, all struggling to survive in a world falling apart under the onslaught of an alien ecology.

Here is the story: Earth has suffered plagues. New plants and animals abound, among them the Chtorrans themselves, giant man-eating caterpillars. They all seem to have been transplanted from some other world, to prepare the ground for some future colonization. The surviving fifth of the human species is struggling to find a way to fight the invasion off, but without marked success. Murphy, drafted as a scientist thanks to a year or so of elementary biology, seems a key. As he tangles with the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

infighting of politics as usual (among both politicians and scientists), he gains insight into the Chtorrans, and at book's end he vows that there has to be a better way to fight them. Presumably he will find that way in Volume II, *A Rage for Revenge*.

One thing that helps Gerrold stand out against the ordinary echo of Heinlein is his starting point. His future U.S.A. has lost a war and been deprived of its military. It pays through the nose, passing its wealth and technology to the world's "less developed countries," which seems barely justice enough to them. The U.S.'s response, in part, has been to adopt the Heinleinian philosophy, to build a nation of strong individuals who can meet and defeat the world on its own terms. It helped when the U.S. realized that looters can come to depend on their loot, and that as long as the U.S. was being looted, the world would depend on U.S. spare parts and technicians. Here then is a defeat turned into a victory with judo-like deftness, turning weakness to strength, turning an attacker's strength back on its source, conquering the world with transistors—now, wait a minute! This is sounding almost like ancient history! Or am I reading too much of Japan into Gerrold's vision?

Whatever Gerrold's intent there, the plan seems spoiled when the alien ecology invades. Yet now the U.S. sees new opportunities for supremacy on Earth. Its competent individuals just may be able to save the world, and thus rule it. This lets me guess that the whole series will amount to a very *Astounding* tale of the technological American ascendant over both aliens and foreigners. If Gerrold escapes this cliché, it will be because of his angst, of the more mature complexity of human relationships he builds into his story. Perhaps he will bring in competent, technological foreigners in later volumes, broadening his definition of the group hero to include a variant of the whole species rather than one of a single nationality. If he does so, he will deserve more praise than I am willing to give him for this volume alone.

You'll enjoy the book and its sequels, I'm sure. I did. It is fast and vigorous and intriguing. It hangs together well. Yet you too may have reservations, perhaps even akin to mine. Try it, and see.

Another series begins with Robert Franson's **The Shadow of the Ship.** Here subspace is the meadowlands, a realm of a peculiar sort. Colored paths traverse it from world to world. Waybeasts have the gift of using the paths to cross from world to world, and on certain worlds people have learned to harness the waybeasts to draw wagons after them. As long as things stay in contact with the waybeasts, or with something else in contact with them, they are safe. If they lose contact, they vanish from subspace, reverting to atoms scattered through real space. People can maintain their own existence, but only as long as they keep their feet on the "ground." If they jump or step off the substratum, they too vanish.

Into this strange context has come Rheinalt Eiverdein, a human of our own civilization, and his alien buddy, the intelligent, inflatable aircat, Arahant. They had been abandoned on a barren world by their own kind, who travel in starships, not on trails. They had been rescued by a woman of the trail culture, Whitnadys, who became Rheinalt's lover, and Rheinalt had made a name and fortune for himself as an inventor, filling in the gaps between the two cultures. There are many such gaps, for the trail culture, for all its travelling, is

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

primitive. It uses gaslights in its beast-drawn spaceships!

Rheinalt would like to return home, but there seems to be no contact between the trail worlds and his own. He is thus understandably excited when he hears a rumor of a starship stranded in subspace, on the most remote reaches of a trail. True, rumor has it that the ship is only a shadow, but he mounts an expedition anyway.

Shadow covers the expedition, revealing the trail culture, its inherent conflicts, fears of change, and essential humanness. It offers a carefully developed subplot that ends in an alternative to the stranded ship when that proves finally useless. Rheinalt acquires an ability to be his own waybeast, a trail blazer. Future volumes in the series could be very interesting.

However, Franson displays a distance from his story, a coolness, that makes it hard for a reader to get involved. He taps the clichés of psi power too superficially. He lays out in detail only his own novelties, and not all of them. He scants his responsibility to justify his world. He neglects plausibility—I wonder how a stable trail can maintain contact with a whirling, gyrating world, how an aircat can inhale air and make itself lighter than air, how . . . and long before story's end he is less than satisfying.

Harry Harrison's heavily illustrated **Invasion: Earth** opens with a flying saucer landing in Central Park. Two dead and fearsome aliens are at the controls; a third attacks the intrepid humans who enter the ship. A fourth, less fearsome than strange, is a prisoner aboard, and it tells of a brutal war among the stars, coming here. Will humans help? Will they let its fellows mount their weapons at the South Pole? Will they supply fissionables and other necessaries? They will? Great!

Hero Rob Hayward is suspicious. Is there really a war? If so, which side are humans now on? He pushes his suspicions, visits the enemy, retains his suspicions, and finally gets permission for an information-gathering raid. He learns the truth, and humans boot the aliens off the planet. A final grudging admission that solving the problem violently might not have been the best approach seems meant to mollify the post-Vietnam generation.

There's action and wit and good stuff for a B-movie. There's superficiality, and lazy thinking, and pictures, and good stuff for a B-movie. It's a distinct lightweight. Ignore it.

M. A. Foster's **Transformer** is the sequel to *The Morphodite*. Here Foster's perfect assassin, who can change sex, age, and guise at painful will, is pursued anew by the powers that had controlled his/her world. They fear him/her, with reason, for he/she was once one of their own, and if memory returns, they are all in jeopardy. On the other hand, if they draw his/her attention, again they will be destroyed.

He/she finds everything easy this time. Too easy. The villains make their own troubles, and his/her arcane mathematics of prognostication (which here Foster calls a subtler version of the I Ching or Tarot!) advises him/her to do nothing in the end. And that end seems to preclude another sequel. At least, if Foster does continue the story, it must bear little relationship to this one and the last. The connecting thread can include villainy and identity, but not memory. Or can it?

The Winds of Change is Isaac Asimov's twelfth collection of short stories

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

from Doubleday. He says so himself. It needs little by way of review. It includes a handful of shaggy dog stories, including the marvelous "Death of a Foy," and a number of short stories from the unlikely pages of computer mags, a catalog of lecturers, and newspapers. Others were originally planned for a French fashion magazine, a TV series, and *Seventeen*. Many appeared in *Isaac Asimov's Science Fiction Magazine*.

Most of the stories are short enough to make this a fine book to read on the bus, standing in line, or while waiting for your roommate to finish brushing his or her teeth.

Charles Platt says there will *not* be a *Dream Makers III*, at least not by him. Number II is it! He's had enough, and writing fiction is much more important than doing interviews.

I know what he means, but I also feel it's a shame. Platt is a fine interviewer, one with the knack of displaying people as they are, in flesh and voice and context. If he does it no more, we have all lost something valuable.

Dream Makers II covers Pournelle, Niven, Priest, William Burroughs, Clarke, Toffler, Sladek, Thomas, Roberts, Norton, Anthony, Laumer, Joe Haldeman, Leiber, Wilson, Anderson, Vance, Sturgeon, Hubbard, Russ, Morris, Joan Vinge, Harrison, Wollheim, Ferman, Reed, Tiptree, and Stephen King. In most cases, we gain a nice feel for his subject.

Platt's Hubbard interview deserves notice. He did not talk to Hubbard in person. Instead, he submitted questions to an intermediary, Vaughn Young, Director of Public Affairs of Author Services, Inc., "Representing the Literary Works of L. Ron Hubbard" in Hollywood, California. Platt shows us both questions and answers, the latter purportedly from Hubbard, somewhere unseen. The answers may even be real, but they do strike me as remarkably unspecific and even evasive. They might well have been written by someone else entirely, perhaps even a "Public Affairs" flack.

Platt was skeptical too, and he pushed. The response was a handwritten "authentication," signed by Hubbard—or by someone able to mimic his signature. I suspect Platt remained skeptical. I do. So will you—until Hubbard returns to public view. As of last report, even his wife and son haven't seen him for years. ■

● Our intelligence and our affections are our most dependable bulwarks against self-destruction. To recognize the existence of such a force within us is the first step toward its control. To 'know thyself' must mean to know the malignancy of one's instincts and to know as well one's own power to deflect it.

Dr. Karl Menninger

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

brass tacks

Dear Sirs:

Two or three months ago one of your authors made some remark to the effect that Man is entitled to exterminate other species because of some supposed superiority on our part. My first reaction was that a species which thinks that way is not superior. However, except for the parallel to the Nazis' "final solution," I could not then defend that opinion. Now, thanks to your April cover story, "Heritage of Flight" by Susan M. Shwartz, I think I can.

In this story, a human colony was established on the planet Cynthia as a last refuge from a desperate, Armageddon-like war. The colonists then found they could not live with the natives, whose young had a venomous, voracious, wholly mindless larval stage in which they ranged over the land the colony needed for crops. The colonists then proceeded to exterminate the Cynthians—with much soul-searching, but they did it. However, in all the debate over this action, one element of the situation seems to have escaped everyone, including the author. My question is this: Does a species which cannot live at peace with itself deserve to survive at the expense of one that can?

In the long run, that question may not even have any meaning. Suppose a Secessionist ship finds the Cynthia colony. Then the Cynthians will have died for nothing—because there will be no humans, either.

That's something to think about when we are tempted to be carried away with bloodymindedness—even here on Earth.

THOMAS LEE BOLES

Long Beach, CA

Dear Mr. Schmidt:

Susan Shwartz's "Heritage of Flight" (April 1983) leaves me wondering about the planet upon which the settlers have

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

been placed. Does she mean that only in this one spot, on an entire planetary surface, is the home of the Cynthians? A flying race would presumably reach out to all areas accessible to them for food and places to lay eggs that would give their young feeding grounds. There should also be additional "flocks" of Cynthians elsewhere on the planet that have had no contact with the settlers. And, if the above seems reasonable, then would not the sky over the settlement once again have flyers in a couple of years as other Cynthians found no "native" competition for food in that area? The decision on the part of the settlers the second time around as to whether or not to wipe out the native life form would be even more interesting than the first-time choice.

C. HENRY DEPEW

Tallahassee, FL

The author replies:

To Thomas Lee Boles: I'm very glad that you realized what I was trying to do in "Heritage of Flight" and that you're asking the questions you're asking. I see one problem with your question "Does a species which cannot live at peace with itself deserve to survive at the expense of one that can?"

We're not—I'm not—talking about some species out beyond Procyon or wherever nor are we indulging in senior-common-room discussion about Colin Turnbull's book on the Ik. We're talking about humans, probably like ourselves, who made an appalling decision. What would I do? I like to think I'd suicide in a gentle(wo)manly fashion: death before genocide. But would I choose that for a child of mine? I'm pretty sure I wouldn't. Would Mr. Boles?

Certainly, I'll agree with anyone who says that using the *argumentum ad hominem* is a cheap rhetorical trick. I used it deliberately to bring home the fact that of course I considered the question that Mr. Boles brought up. What I think, I'm afraid, is that when placed in a survival situation most of us are going to be glad to survive, however we can. Add children to that situation (it's my private theory that one's children shouldn't have to suffer for one's theories), and we're going to fight even harder. Being human, we're probably going to play quite dirty. After all, we *are* the race that perpetrated Thucydides's Melian dialogue with its chilling "for the strong do what they can, while the weak suffer what they must."

Does that race deserve to survive? Not for that statement. For other things, definitely. But my question to Mr. Boles is this: how can one separate oneself from one's own race long enough to ask that question? In the pages of a magazine read by literate, scientifically trained, and otherwise educated types, we have leisure and detachment enough to try to take the long, lofty view. I rather doubt it would wash on the frontier.

By the way, I don't really know how I feel about what my characters did: that was *their* answer to their problem.

Definitely, however, I appreciate Mr. Boles's suggestion of a Secessionist ship. As a matter of fact . . . no, I don't think I want to go into that right now.

To C. Henry Depew: Mr. Depew's comments on Cynthians elsewhere on the planet moving in to resettle the area eradicated by the humans are sound. Of course, what I'd like to do is hedge and locate my colonists on an island surrounded by chancy wind currents, thus making it impossible for other Cynthians to move in. Or I could have the colony site sealed away by high mountain ranges which the Cynthians couldn't fly above. Or I could assume that interbreeding between Cynthians of the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

contaminated group (those who used the poison-impregnated paint) would prove sterile, if not actually lethal, to the others involved . . . but it would take time for the entire race to die. It's an interesting problem, including the moral dilemma that Mr. Depew raises. I tend to think that *this* generation of human colonists would have to wipe out the remaining Cynthians. I don't know what the next—or a subsequent—generation might do: try to coexist, I'd assume, and run into whatever problems came of that decision. I may try to find out.

SUSAN M. SHWARTZ

Dear Dr. Schmidt:

Some Comments on the 1983 April issue:

1. The editorial. The proper quote is "A little *learning* is a dangerous thing/Drink deep or taste not the Pierian Spring." Alexander Pope, "An Essay on Man." I'd also rather you didn't credit Walt Disney so heavily for the Sorcerer's Apprentice; Dukas based his music on Goethe's *Der Zauberlehrling*. SF and fantasy owe too much to Goethe to treat his work so lightly. Should *The Wizard of Oz* be credited to MGM rather than L. Frank Baum?

2. "Murphy." Why so sheepish about publishing fantasy? The piece is well written, logical, provides good characterization, has a plot, offers a fresh approach. What more could anyone ask?

ROGER M. FIRESTONE

Norristown, PA

Had I said I was quoting Pope, your complaint would be valid—but I didn't. I said I was quoting "an old saying," and the one I quoted is the version I have heard more often in common usage. And while many stories have long and impressive genealogies (I wouldn't be surprised to learn that even Goethe's Zauberlehrling *had ancestors), I wasn't trying to give ultimate credit, but to provide an instantly familiar example. Like it or not, a lot more people in this neck of the woods have seen Disney than read Goethe!*

Dear Mr. Schmidt,

I thoroughly enjoyed the Feb. '83 issue, especially David Palmer's "Seeking." I hope there will be a sequel before too long.

What prompted me to write, though, was Dr. Forward's conclusion to *Rocheworld*. Unfortunately I think I've found a flaw in the story. While the *Dragonfly* is submerged its crew is under more than ten atmospheres of oxygen/nitrogen (the exact mix is not specified). Problem #1: Pure oxygen at more than two atmospheres is poisonous; it causes a convulsive reaction. Therefore if the *Dragonfly*'s air were 20% or more oxygen the crew would be incapacitated or dead. Problem #2: Even if the cabin air were less than 20% oxygen the crew would be incapacitated by nitrogen narcosis, an effect of high pressure nitrogen similar to drunkenness. Problem #3: Pressurized nitrogen is absorbed by the body's soft tissues; the amount absorbed is proportional to the pressure × the time. Getting rid of that nitrogen takes time; if you rush it it comes out of solution in bubbles —inside your body. This is called decompression sickness or "the bends" (because victims tend to curl up in pain). According to my copy of the Navy standard scuba dive table, a dive to five atmospheres for one hour requires two and a half hours of gradual decompression. This is approximately how long the *Dragonfly* took to come up from more than twice that pressure and a much longer exposure time. One way or another the crew would have been DOA at the surface.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

My information comes from a scuba certification course sponsored by the YMCA.

Thanks for your time and for the magazine.

RAYMOND JACKSON

Metairie, LA

The author replies:

You're right. Fortunately your letter came before I sent the last draft of the book version to the publisher. I will just make the walls of the "Magic Dragonfly" aerospace plane a little stronger so we can keep the internal pressure at one atmosphere. I like to keep the science in my stories as accurate as possible and have developed a small group of technical experts that scan my first drafts for errors like this. Unfortunately, none of the present group are scuba experts. Would you be interested in joining them?

BOB FORWARD

Dear Mr. Schmidt,

Here is a pipe dream that I would like to propose as a project for the L-5 Society or kindred souls. It just might work.

If all those very talented writers and media people who believe in "space" put together a TV program—a weekly, prime-time, commercial program about building a space station—the first space colony—perhaps it could sell the concept to the American people.

The possible scenarios are endless. Look at all the possible problems and interactions: the engineers, the physicists, the medical teams, the space miners and prospectors, the construction crews, the shuttle crews; and Earthbound the politicians, the bureaucrats, the military, the fundamentalists, international relations (not to mention boy/girl relations).

Show the American people that the problem has been looked at in detail and that we *can* do it, and if we don't do it soon we may not have the resources later. Make it 1990 or the not too distant future and make it REAL.

If you've got good scripts, you might have a chance of finding a sponsor (aluminum, steel, computer, aerodynamics companies??). Keep it like "Hill Street Blues" with two or three stories going at one time. Keep it like the soaps with "cliffhangers" and sex. But keep the stories good and it can be done. I know it sounds like pie-in-the-sky but I think it's worth a try. A lot of our financial (and psychological) problems could be alleviated by an *actual* space station construction program. It would generate thousands of jobs and be a challenge we could be proud of. If we can't convince the politicians, why not go "over their heads"?

MARY ELLEN ACKERMANN

603 N. Mulberry

Ottawa KS 66067

Dear Sirs:

The Astronomical Society of the Pacific is making available a complete, updated table of the characteristics of all the known planets and satellites in our solar system. Prepared under the supervision of noted planetary astronomer David Morrison, the table includes all the recent results from planetary flyby missions and Earth-based telescope observations.

As a public service, the non-profit Society would be happy to provide a copy of the table to anyone who sends a *stamped self-addressed envelope* to:

Solar System Table, A.S.P., 1290 24th Avenue, San Francisco, CA 94122. (Outside the U.S. please send an addressed envelope with international postage payment coupon.) ■

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

CLASSIFIED MARKET

ANALOG — published monthly. CLASSIFIED AD rate is $1.10 per word — payable in advance — ($22.00 minimum). Capitalized words 40¢ per word additional. To be

ADDITIONAL INCOME

LOTTERIES Worldwide By Mail! Five countries—fourteen states! Complete entry details $1.00 plus stamp: Southwest Winners, Box 2029A, El Cajon, CA 92021.

EXTRA MONEY in Your Spare Time. See how hobbies can be moneymaking ventures. Lists household articles which may be worth $100's. Send $4.60 today to The Bee's Knees, 820 Clearview Drive, Vinton, VA 24179

AGENTS WANTED

SALES *agents wanted now.* Sell unusual moneymaking opportunity books by mail. Big profits possible. Details $1.00. Joseph Salvucci, 22 Shepard St., Boston, MA 02135.

SINCERE book agents wanted now! Part or full time. Do not confuse with usual worn-out offers. No experience needed. Full details send $1.00 to GTS Enterprises 10-F, P.O. Box 46, Pismo Beach, CA 93449.

AUTHOR'S SERVICE

IDEAS for SF authors: $3 each, 5 for $10. Ideas sent once, no duplicates. Duplicate list 10 for $10. SASE with $1 for information. Ed's Ear, Idea File, P.O. Box 8086, Poughkeepsie, NY 12601.

AVIATION

ANTIGRAVITY PROPULSION DEVICE! Free Brochure. RDA 873, Concord, NC 28025.

RADIO CONTROLLED MODEL AIRPLANES! Informative booklet filled with facts on getting started in this exciting hobby. Yours for only $2.00! St. Croix, Box 279V, Park Falls, WI 54552.

BOOKS & PERIODICALS

ANALOG, Asimov, Astounding, Galaxy, Weird Tales, etc. Back Issues at Reasonable Prices. Free Catalog. Collections also purchased. Ray Bowman, Box 5845A, Toledo, Ohio 43613.

SF—Fantasy Magazines, Books (New and Used). 1983 catalog $1.00. Collections purchased. R. Madle, 4406 Bestor Drive, Rockville, MD 20853.

COMPUTER listings of paperbacks, science fiction, mysteries, westerns, magazines. Individually printed, always current. Send SASE. Riger, 3148 Holmes, Minneapolis, MN 55408.

BOOKS & PERIODICALS—Cont'd

PUBLISH YOUR BOOK! Join our successful authors. Publicity, advertising, beautiful books. All subjects invited. Send for fact-filled booklet and free manuscript report. Carlton Press, Dept. SMV, 84 Fifth Avenue, New York 10011.

WORLDWIDE MAIL ORDER. Vast stock of hardcover and paperback books, magazines. Fast efficient service. Ten year reputation. Four catalogues yearly: US/Can., free; all other $1.00. THE SCIENCE FICTION SHOP, 56 EIGHTH AVE., N.Y., N.Y. 10014.

BEYOND THE EARTH. Monthly Newsletter: Present and Future U.S./Foreign Space Activities. Editor Former Senior Scientist NASA Headquarters. One-Year Subscription, $24.00 to: B.T.E. (U), P.O. Box 827, Washington, DC 20044-0827.

MYSTERY Bookstore issues free monthly catalog of new books. The Butler Did It, 10449A Green Mountain, Columbia, MD 21044

"EXPOSE HUMAN SHARKS" Stop Trickery! 100 Protections! End Worry, Enjoy Love. Command Conditions! $2 Booklet. Newlife, Box 684-DD, Boulder City, Nevada 89005.

60,000 Science Fiction and Mystery paperbacks. Hardcovers, Magazines. Free catalogs! Grant Thiessen, Box Z-86A, Neche, ND 58265-0133.

SEARCHING for elusive titles? Try us! 26,000 in stock. SF, Mystery, Other Catalogues available. Cosmic Enterprises, 1200 Hewitt, St. Paul MN 55104.

CHARLES Fort's amazing world of the unknown. International Fortean Organization established 1966. Sample Journal $2.50. Box 367 Arlington, VA 22210.

THE FANTASTIC BOOK OF FUN PROJECTS Make an erupting Volcano, Simulated Earthquake Pressure Sensitive Burglar Alarm, Crystal Garden Martian Robot Land Rover, Space Putty. Send $4.00 to: Richard Jones, 111 E. Des Moines, Westmont, IL 60559.

AMAZING New booklist on a variety of subjects Over 3 hundred different subjects. Free listing Write to: BROWN'S ENTERPRISE, P.O. Box 4229 Philadelphia, PA 19101-2229.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

PLACE CLASSIFIED

included in the next issue please send order and remittance to R. S. Wayner, Classified Ad Director, DAVIS PUBLICATIONS, INC., 380 Lexington Ave., New York, N.Y. 10017.

BUSINESS OPPORTUNITIES

FREE Book—"2042 Unique, Proven Enterprises." Fabulous "Little Knowns." How tiny projects made big money! Work home! Haylings-E12, Carlsbad, CA 92008.

TAKE PICTURES for profit. Be your own boss. No experience required. Free information. Write: Photomoney, 14589H West 32nd, Golden, CO 80401.

STAY HOME! MAKE MONEY ADDRESSING ENVELOPES. VALUABLE GENUINE OFFER. 20¢. Write Lindco, 3636-DA Peterson Ave., Chicago, IL 60659.

$1,000 Weekly Home Business Directory. Free Details. Name and address to: Box 1610-AN, Darien, Connecticut, 06820-1610.

INTEREST Free money! No Collateral. No cosigners! No Credit Checks! Write Now for free details! Grants-DPC1083, Box 2298, Sandusky, OH 44870.

BECOME SELF-EMPLOYED, no experience necessary. GUARANTEED SUCCESS. No inventory to maintain. START IMMEDIATELY. We fill orders on thousands of WARRANTED items. Receive complete wholesale package, FREE 10 DAY EXAMINATION, $25.00 (Refundable). West Coast Associates Ltd., 13562 Vanowen, Suite 18, Van Nuys, California 91405.

MAKE money by mail. Free details. Send a self-stamped envelope. R. Oltrogge, Dept. T. P.O. Box 71, Livingston, MT 59047.

MAKE 2 to 3 times your cost on Hundreds of Products. Gift items, novelties, toys, 2500 others. $3.00 brings Giant Catalog, refundable on first order. House of Gifts, 601 West 7th Ave., Lennox, SD 57039.

SPACE AGE CONVENIENCE FOODS. Booming Megatrend Growth Industry. Independent Distributors needed. Write: New Growth Marketing, P.O. Box 157, Warren, MI 48090.

START your profitable wholesale gift business at home. Your own hours. Free details. Write: Associated Merchandisers, Box 1933-A, Greenville, TX 75401

1000 BUSINESS OPPORTUNITIES compared by expert. Proven book reveals which ones guarantee wealth. Free information. Success Publications, P.O. Box 16655, Cleveland Ohio 44116

BUSINESS OPPORTUNITIES—Cont'd

SUBWHOLESALING—Sell items to Consumers, Businesses, Flea Markets, Mailorder, Open House, etc. Information send LSASE: New, Box 262, Tremont, IL 61568

BANISH UNEMPLOYMENT FEARS FOREVER. Information regarding seven different home based businesses. Write: Cisco House, Suit O-2, 845 West Robinson Street, P.O. Box 2006, Carson City, Nevada 89702

EDUCATION & INSTRUCTION

NUCLEAR War. Free self-study course and radiation products leaflet. $1.00 postage and handling. Radex, 4109 Graf Drive, Louisville, KY 40220.

UNIVERSITY DEGREES BY MAIL. Bachelors, Masters, Ph.D's . . . without attending classes! Inexpensive, fast. Free revealing details. Counseling, Box 389-AN-10, Tustin, California 92680.

HOME STUDY COURSE IN ECONOMICS. A ten-lesson study that will throw light on today's baffling problems. Tuition free; small charge for materials. Write: Henry George Institute, 5 East 44th Street, New York 10017.

GOVERNMENT SURPLUS

"GOVERNMENT SURPLUS" JEEPS $30,000! 800,000 Items! Complete information Your Area. Largest OFFICIAL Directory. $3.00 (Guaranteed). SURPLUS (A525). 4620 Wisconsin Northwest, WASHINGTON, D.C. 20016.

HOBBIES & COLLECTIONS

GREAT RADIO PROGRAMS—mystery, adventure, science-fiction. Free list cassettes. Rare Radio, Box 117, Sunland, CA 91040.

HYPNOTISM

FREE Catalog. Hypnotism, Hypnotic cassettes, sleep learning. Become the person you truly want to be. DLMH, Box 487, Anaheim, CA 92805.

FREE CATALOG! Popular Hypnosis/Sleep-Learning and SUBLIMINAL Tapes. Attain goals, conquer problems—AMAZING RESULTS! ADVANCED SYSTEMS—D15, 13906 Ventura, Sherman Oaks, CA 91423.

FREE HYPNOSIS! Do it yourself system reveals secrets, tells how. Guaranteed! Write now! NNC Labs, Box 74, Merrick, NY 11566

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

IMPORT-EXPORT

MARKET 2500 "Amazing" New Fast-Sellers Without Risk. Giftware, Decorative Accessories, Household Furnishings. Free Brochures! Allrightpro, Box 91309-N10, Cleveland, OH 44101

INVENTIONS WANTED

EARN Royalties from your invention or new product idea. Nuprodux International, 1377 K St. NW, 141, Washington, D.C. 20005.

JEWELRY

BIRTHSTONE JEWELRY—custom made. Free information. Rings, pendants, earrings under $20.00. Margo Steeves, 12021 Wilshire #294, Los Angeles, CA 90025.

LOANS BY MAIL

BORROW $25,000 "OVERNIGHT." Any purpose. Keep indefinitely! Free Report reveals little-known sources/techniques! Success Research, Box 19739-SX, Indianapolis, IN 46219.

BORROW $30,000 without interest! All eligible. Repay anytime. Free details. Infohouse, 508-AN, 533 Sutter, San Francisco, CA 94102.

$LOANS$ ON SIGNATURE TO—$100,000! Any purpose. Details Free. ELITE, Box 206-DG, East Rockaway, New York 11518.

GET cash grants—from Government. (Never repay.) Also, cash loans available. All ages eligible. Complete information, $2 (refundable). Surplus Funds-DG, 1629 K St., Washington, DC 20006.

MAGIC TRICKS, NOVELTIES, PUZZLES

FREE Book of 5 Inter-Planetary Travelers Checks. Send 75¢ postage and handling. The Alien Express Co., 51 E. 42, Dept. AN, N.Y., N.Y. 10017.

MEMORY IMPROVEMENT

INSTANT MEMORY...NEW WAY TO REMEMBER. No memorization. Release your PHOTOGRAPHIC memory. Stop forgetting! FREE information. Institute of Advanced Thinking, 845DP ViaLapaz, Pacific Palisades, CA 90272.

MISCELLANEOUS

SAVE! Fabulous Natural Gems. For Jewelry, Collecting! Gorgeous Amethysts, Tourmalines, Sapphires! Information Free. W. Taylor, Gemcutter, 113-A Martin, Indian Harbor Beach, FL 32937.

OLDTIME radio programs. Suspense, drama, science fiction, comedies. Highly enjoyable tapes. Free catalogue. Carl D. Froelich, Route One, New Freedom, Pennsylvania 17349.

WILDCAT Oil & Gas Leases in New Mexico, Arizona, Wyoming, Utah, $1.50 per acre. Size 40 acres and up. J. L. Aldrich, Box 2541, Lawton, OK 73502.

MISCELLANEOUS—Cont'd

WIN A COMPUTER. Send a short essay describing why you should have a computer to: Galactic Enterprises, P.O. Box 210, Shepherd, MT 59079 before 11/1/83. Include $3.97 registration/handling fee; SASE for winner's name. Winner will receive Commodore 64 computer and be notified by 12/1/83. Essays judged on creativity, originality, conciseness. Judging decisions final. Entries become property of Galactic Enterprises. Include note if not desired to be on mailing list. Void where prohibited.

MODELS & MODEL SUPPLIES

ROBOTS! SPACESHIPS! From TV and movies. Imported model kits. Unavailable elsewhere. Catalog $1: Cosmic Connection, 426 Moody St., Waltham, MA 02154.

MONEYMAKING OPPORTUNITIES

$60.00 per Hundred securing-stuffing envelopes from home. Offer-details: Rush stamped self-addressed envelope. Imperial, P-460, X17410, Fort Lauderdale, FL 33318.

GOOD MONEY! Weekly! Processing Mail! Free Supplies, Postage! Information? Rush stamped envelope! Foodmaster-DC3, Burnt Hills, NY 12027.

CAN You Stuff 1000 Envelopes for $500.00 Weekly? Send six 20¢ stamps. Blossom, Box 21, Stratford, NJ 08084.

INDEPENDENT INCOME. UNIQUE MONEYMAKING OPPORTUNITY. Start your own business or buy at wholesale prices. IPLP, Box 127, Greenbelt, MD 20770.

IT'S possible to spend over $1100.00 to find a few profitable money making offers, I know I did. I make thousands monthly after finding the right offers. I have hundreds of worthless offers. Don't make the same mistake I did. I will send you 8 ways to make thousands monthly. Send $5.00 plus 4-20¢ stamps or $1.00 to cover postage—WIMM, P.O. Box 491, Monroe, WI 53566.

EARN EXTRA MONEY mailing circulars. Get paid by mail. For more information send $1 to: Kay, Box 6328, Biloxi, MS 39532.

NEED CAPITAL? Join our Home Mailers Program. $1000 per week potential. Send SASE to: Mother-Lode, 15½ Nelmar Ave., St. Augustine, FL 32084.

$750 WEEKLY POSSIBLE Mailing Circulars! Easy Guaranteed Income! No Experience Needed! Start Immediately! Free Details: PUBLICATIONS, Box 2096-D, Niagara Falls, NY 14301.

COULD you use $50.00? Will show you how. Write now for free information. William Stack, 162 Front Street, Scituate, MA 02066.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

MONEYMAKING OPPORTUNITIES—Cont'd

BOOK SALES AGENTS WANTED! Your chance to make big money fast!! Sell How to Make Money Books by Mail. Start now part time or full time. As your Key Source—I'll supply you with everything you need to operate your own home business. Millions of potential buyers. Let's make money together. For full details send $1.00 to: D & J ENTERPRISES, P.O. Box 54648-Z, Washington, DC 20032.

GUARANTEED weekly income! Easy program mailing our circulars. Free supplies. Experience unnecessary. Start immediately. Write: Bond, Box 1147, Melbourne, FL 32901.

MILLION Quality Color Films—Cartridges, Rolls, Disks—to be distributed nationwide absolutely free as part of massive promotional campaign. Distributors needed. Excellent remuneration and prizes. Chance of dealership. For details and request forms send $10.00: Computron, Box 917, New Haven, CT 06504.

UP to 200% profit taking orders. 48 page color catalog. Housewares, tools, gifts. $2.00 refundable: Franklin, 1801B Elizabeth, North Chicago, Ill. 60064

NEW ORIGINAL business whose time is come! $1000 weekly, minimal mechanical skill. Send $6, QUANTUMSOUND, 1731 Howe Ave. #192, Sacramento, CA 95825

NEW Money-making money-saving book catalog with 400 titles. $1.00 refundable withfirst order. Rocchio Enterprises, 4405 Aldrich Ave., So. Minneapolis, MN 55409

MUSIC & MUSICAL INSTRUMENTS

SING for Health, Happiness, Prosperity. Five Easy Steps $20.00. One + One Entity, P.O. Box 102, Clairton, PA 15025.

OF INTEREST TO ALL

HALLOWEEN PARTY October 22/&/23, Oceanside Holiday Inn, Fort Lauderdale, Florida. WALTER KOENIG, JOHN BYRNE and more. P.O. Box 970308, Miami, Florida 33157—305-253-6842.

PERSONAL

FREE CATALOG! Credit, Divorce, Privacy, Tax, Employment Problems? Our Books have solutions. Write: Eden, 11623 Slater, Box 8410-A Fountain Valley, CA 92708.

UNIVERSITY DEGREES BY MAIL. Bachelors, Masters, Ph.D.'s...without attending classes! Inexpensive, fast. Free revealing details. Counseling, Box 389-DP10, Tustin, California 92680.

MEN! Friendly, fun-loving, pretty girls want to meet YOU. Details free. Merit Enterprises, Box 74758-DD, Los Angeles, CA 90004.

PERSONAL—Cont'd

SINGLE? Meet that special person—anywhere! Very low fees. DATELINE, 316 Fifth Ave., New York 10001, (212) 889-3230 or (312) 523-2100 or (213) 854-0640.

BECOME ORDAINED Minister legally. Free "Reverend" credentials. Non-Denominational, church charters available. Church of God Within, Box 398475-A. Miami, Florida 33139.

SINGLE? Widowed? Divorced? Nationwide introductions! Hundreds of sincere members! All Ages! Free information! Write: Identity, Box 315-DT, Royal Oak, Michigan 48068.

SCANDINAVIAN Ladies, 18-68, sincere, seek correspondence, friendship, marriage. Details: Scannaclub, Dept. C03, POB 4, Pittsford, NY 14534. (Please enclose stamp).

SINGLE? Find that special person! Correspondence club exclusively for SF fans. Free information. G. Marklin, 3807 Gold #5, Los Alamos, NM 87544.

RADIO & TELEVISION

CABLE TV DESCRAMBLERS and CONVERTERS. PLANS and PARTS. Build or Buy. For information send $2.00. C&D Electronics, P.O. Box 21, Jenison. MI 49428.

RECORD & SOUND EQUIPMENT

FREE Promotional albums, concert tickets, stereos, etc. Information: Barry Publications, 477 82nd Street, Brooklyn, NY 11209.

SONGWRITERS

POEMS WANTED. Songs recorded and published. Radio-TV promotions. Broadway Music Productions, Box 7438-DA, Sarasota, FL 33578.

SONGWRITERS: Exciting offer! Poems, songs needed. Free evaluation. Creative Music Productions, Box 1943-A10, Houston, TX 77001.

TOYS, GAMES & ENTERTAINMENT

JEDI'S & AGENTS sell "ANDROIDS," the Monopoly-Stargame! $15., each. Brochure: $1. Sales Kit: $5. Box 17281 T.A., Denver, Colorado 80217.

UNUSUAL BOOKS

THE INTELLIGENCE LIBRARY: Many unique books & official manuals on RESTRICTED subjects—Bugging, Wiretapping, Locksmithing, Covert Investigation, & MUCH MORE. Free brochures, MENTOR, DP, 135-53 No. Blvd., FLUSHING, N.Y. 11354.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a calendar of analog upcoming events

7-9 October
WINDYCON X (Chicago-area SF conference) at Arlington Park Hilton, Arlington, Ill. Author Guest of Honor—George R.R. Martin; Artist Guest of Honor—Victoria Poyser; SMOF Guest of Honor—Ben Yalow. Two program tracks, art show, film program, hucksters, brown paper bag masquerade. Info: Windycon X, Box 432, Chicago IL 60690.

7-10 October
EARTHCON III (Cleveland-area SF conference) at the Charter House Inn, Euclid, Ohio. Guests—Marion Zimmer Bradley, Jacqueline Lichtenberg, Jean Lorrah. Art show, masquerade, banquet, films, video, hucksters, games. Registration—$20 at the door. Info: Earthcon Three, Box 22041, Beachwood OH 44122 (enclose two 20¢ stamps).

14-16 October
CONTRADICTION 3 (Niagara-area SF conference) at John's Niagara Hotel, Niagara Falls, N.Y. Info: Linda Michaels, 27 Argosy Drive, Amherst NY 14226.

14-16 October
NOVACON (Central Penn. SF conference) at Treadway Resort Inn, Lancaster, Penn. Guest of Honor—David Gerrold; Featured Artist—Teanna Byerts. Panels, poetry, art show, hucksters, gaming, etc. Registration —$8 until 30 September, $10 at the door. Info: NovaCon '83, Box 41, Marietta PA 17547.

14-16 October
ROVACON 8 (tidewater Virginia SF conference) at the Hotel Roanoke, Roanoke, Va. Guest of Honor—C.J. Cherryh. Other guests—George Takei, Jean Rogers, Kelly Freas, M.A. Foster, etc. Panels, lectures, films, banquet, costume contest, hucksters. All profits go to four academic scholarships. Info: RoVaCon 8, Box 117, Salem VA 24153.

17-19 October
Eighth Conference on Local Computer Networks at Minneapolis, Minn. Info: Allan I. Edwin, Interactive Systems/3M, 220-9W, 3M Center, St. Paul MN 55144.

17-19 October
Conference on Frontiers in Education at Worcester, Mass. Info: FIE 83, W.R. Grogan, WPI, Worcester MA 01609.

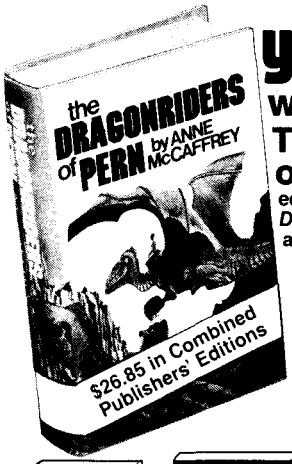
24-26 October
ACM Annual Conference at N.Y.C. Info: Thomas D'Auria, ACM83 Conference Chairman, City of New York, Computer Services Center, 111 Eighth Avenue, New York NY 10011.

4-6 November
SCI CON 5, Sheraton Beach Inn, Virginia Beach, Vir. Guest of Honor—Alan Dean Foster; Artist Guest of Honor—Ron Miller; Fan Guest of Honor—Curt Harpold. Registration: $13. Info: send S.A.S.E. to Sci Con 5, P.O. Box 9434, Hampton VA 23670.

—Anthony Lewis

Items for the calendar should be sent to the Editorial Offices months in advance of the issue in which you want the item to appear.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

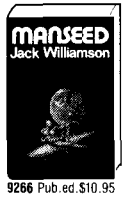


YOURS FREE with membership

The DRAGONRIDERS of PERN One mammoth edition including all 3 novels: *Dragonflight, Dragonquest,* and *The White Dragon.*

0828 Pub.ed.$14.50

0158 Illustrated. Pub.ed.$11.95



9266 Pub.ed.$10.95

7005 Spec.ed.

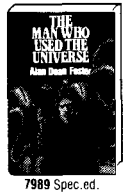
2618 Spec.ed.

†**2295** Spec.ed.

*__0216__ Pub.ed.$15.95

2634 Pub.ed.$6.95

1057 Pub.ed.$12.50



7989 Spec.ed.

0166 Pub.ed.$16.95

5637 Split Infinity; Blue Adept; Juxtaposition. Comb.pub.ed.$34.40

And take any 4 for $1 WITH MEMBERSHIP

SEE OTHER SIDE FOR ADDITIONAL SELECTIONS.

How the Club works:

You'll receive your choice of any 4 books for only $1 plus shipping and handling) and a free copy of *The Dragonriders of Pern* after your application for membership is accepted. We reserve the right to reject any application. However, once accepted as a member, you may examine the books in your home and, if not satisfied, return them at Club expense within 10 days. Your membership will be cancelled and you'll owe nothing. The free book is yours to keep in any case.

About every 4 weeks (14 times a year), we'll send you the Club's bulletin, *Things to Come,* describing the 2 coming Selections and a variety of Alternate choices. In addition, up to 4 times a year you may receive offers of special Selections, always at low club prices. If you want the 2 Selections, you need do nothing; they'll be shipped automatically.

If you don't want a Selection, prefer an Alternate, or no book at all, just fill out the convenient form always provided and return it by the date specified.

We allow you at least 10 days for making your decision. If you do not receive the form in time to respond within 10 days and receive an unwanted selection, you may return it at our expense.

As a member you need take only 4 Selections or Alternates during the coming year. You may resign any time thereafter or continue to enjoy Club benefits for as long as you wish. One of the 2 Selections each month is only $3.98. Other Selections are higher, but always much less than hardcover publishers' editions—up to 65% off! A shipping and handling charge is added to all shipments. Send no money now, but do mail the coupon today!

Note: Prices shown are publishers' edition prices.

***Explicit scenes and/or language may be offensive to some.**

†**TM & © 1983 Lusasfilm Ltd. (LFL)**

SCIENCE FICTION BOOK CLUB®

Dept. ER-204, Garden City, N.Y. 11530

Please accept my application for membership. Send me the 4 books whose numbers I have indicated below plus my FREE book and bill me just $1 (plus shipping and handling). I agree to the Club Plan as described in this ad. I will take 4 more books at regular low Club prices during the coming year and may resign any time thereafter. The FREE book will be mine to keep whether or not I remain a member. SFBC offers serious works for mature readers.

FREE BOOK #2543	1.	2.	3.	4.

Mr.
Ms. _____
(Please print)

Address _____ Apt. # _____

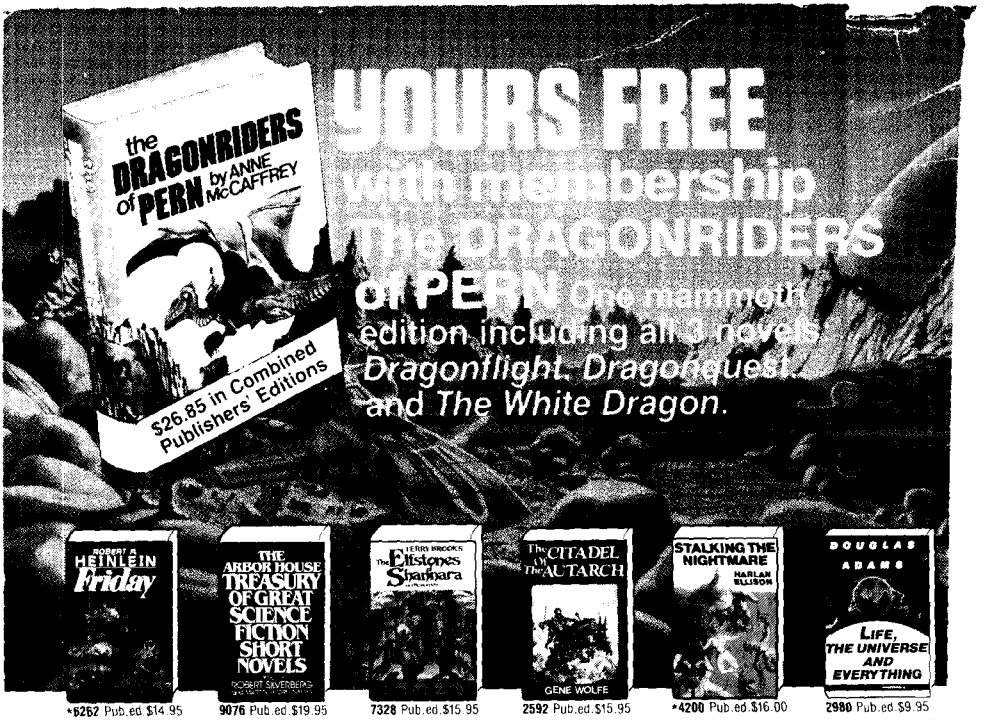
City _____

State _____ Zip _____

If under 18, parent must sign. _____

The Science Fiction Book Club offers complete hardbound editions sometimes altered in size to fit special presses and save you even more. Members accepted in U.S.A. and Canada only. Canadian members will be serviced from Canada. Offer slightly different in Canada. 25-S233 E

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED


the DRAGONRIDERS of PERN by ANNE McCAFFREY
$26.85 in Combined Publishers Editions
YOURS FREE
with membership
The DRAGONRIDERS of PERN One mammoth edition including all 3 novels: Dragonflight, Dragonquest, and The White Dragon.

*6262 Pub.ed.$14.95

9076 Pub.ed.$19.95

7328 Pub.ed.$15.95

2592 Pub.ed.$15.95

*4200 Pub.ed.$16.00

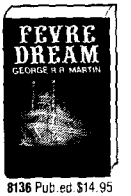
2980 Pub.ed.$9.95

1875 Pub.ed.$16.95

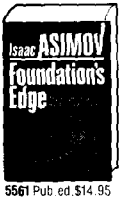
4721 Pub.ed.$14.95

4994 Pub.ed $19.95

1735 Spec.ed.



8136 Pub.ed.$14.95



5561 Pub.ed.$14.95

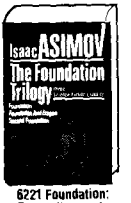
0075 All 5 *Amber* novels. 2 vols. Comb.pub.ed.$32.30

0539 *Thieves' World*; *Tales from the Vulgar Unicorn*; *Shadows of Sanctuary*. Spec.ed.

4853 All 4 Diamond books: *Lilith*, *Cerberus*, *Charon*, and *Medusa*. Spec.ed.

7799 Murder and Magic; Too Many Magicians; *Lord Darcy Investigates*. Spec.ed.

1958 Twelve Fair Kingdoms; The Grand Jubilee; *And Then There'll Be Fireworks*. Comb.pub.ed.$31.85



6221 *Foundation*; *Foundation and Empire*; *Second Foundation*. Pub.ed.$17.95

AND TAKE ANY 4 FOR $1

WITH MEMBERSHIP

See other side for coupon and additional Selections.

THE SCIENCE FICTION BOOK CLUB®

25-S233

Note: Prices shown are publishers' edition prices.

***Explicit scenes and/or language may be offensive to son**

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED